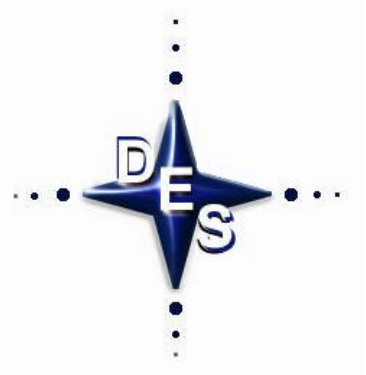
Statement of Work
Master Contract Requirements for Architects & Engineers



Business Center
Design, Construction and Alternation Branch
Division of Engineering Services

TABLE OF CONTENTS

SECTION 1: GENERAL

SECTION 2: GENERAL DESIGN REQUIREMENTS

SECTION 3: A/E CONTRACT REQUIREMENTS

SECTION 5: PROJECT SPECIFICATIONS

SECTION 6: COST ESTIMATES

SECTION 7: POST DESIGN SERVICES/CONSTRUCTION MANAGEMENT

APPENDIXES

SECTION 1: GENERAL

1.1 Purpose

This guide has been prepared by The National Institutes of Health (NIH) Division of Engineering Services (DES), in order to instruct architects and engineers performing professional services under contract to NIH and to obtain uniformity and coherence in the presentation of the design documents.

1.2 Scope

This guide defines the standards of design, along with the detailed requirements, format and the mechanics of preparing and submitting project drawings, specifications, cost estimates and other related documents comprising a construction contract package.

1.3 Definitions & Abbreviations

Architect/Engineer (A/E):
The architectural and/or engineering firm contracted by NIH. The contract will be referred to as the "A/E contract".

Acquisition Branch-C:
The primary contracting branch responsible for coordinating the synopses, selections and negotiations for A/E contracts. Contracting officers from other branches may also be involved in A/E tasks.

Project Officer (P.O.):
The NIH, DES designated representative who administers the A/E contract and/or individual tasks on the contract after award.

Contracting Officer:
A contract representative of the Government at NIH, responsible for overall management and execution of contractual actions.

Government:
The Federal Government, including the NIH.

Guide Specification:
A criteria document, describing the standardized format, scope and content of project specifications for a specific product, group of products or for a construction procedure. A guide specification is designed to be edited by the A/E to suit the needs of a particular project. Guide

specifications are never to be referenced in the project specifications.

Project Specifications:
The complete construction specifications developed by the A/E for a specific project, prepared in conjunction with the project drawings. The project specifications, along with the final drawings, are used for bidding purposes and construction.

Contract Drawings:
The complete construction drawings indicating all aspects of the work required for a specific project.

Record Drawings:
Drawings showing the actual as-built conditions of constructed facilities.

Reference Documents, Standards and Specifications:
Those industry and government documents, standards and specifications referenced within the project specifications.

Work Request:
A reference number used by NIH to identify a project. The same work request number may be assigned to several tasks (i.e. a feasibility study, design, and post design services) or a task may include several work request numbers. The work request number(s) shall be identified on A/E submissions.

ICD:
Institute, Center, or Division. Organization who will use the facility to be designed.

Task:
An individual record of call on the contract. Each task will have a separate Statement of Work identifying the specific requirements for the project.

1.4 Responsibilities of the A/E

The A/E shall be responsible for the professional quality, technical accuracy and coordination of the project design, including the project drawings and specifications, and other services furnished under the A/E contract. The A/E shall, without additional compensation, correct or revise errors or deficiencies in the project design, including the project drawings and specifications, and other services furnished under the A/E contract.

The Government's review, approval, acceptance of, or payment for any of the services required under the A/E contract, shall not be construed as a waiver of any rights under the A/E contract or of any cause of action arising out of the performance of the A/E contract. The A/E shall be, and remain liable to the Government, in accordance with applicable law, for damages to the Government caused by the A/E's negligent performance of any of the services furnished under the A/E contract.

The use of a particular criteria requirement, unless specifically prescribed by the Government,

shall not release the A/E from the responsibility for professional quality and technical accuracy.

1.5 Errors and Negligent Performance

Design errors or omissions which result in damages or extra cost to the Government, will be evaluated for potential A/E financial liability. If the Government determines that the A/E is financially liable for a design deficiency, the A/E will be so advised by official correspondence. Reimbursement of costs incurred by the Government as a result of the A/E's errors and/or negligent performance, are actively pursued by NIH.

When the NIH determines that the A/E is liable for damages as a result of A/E errors and/or negligent performance, the NIH will arrange settlement directly with the Contractor and will bill the A/E.

1.6 Correspondence

Correspondence shall be addressed to the Project Officer, NIH, DES, 9000 Rockville Pike, Building 13, Bethesda, MD 20892. The project title and contract number and, if applicable, the Work Request number assigned to the A/E contractor shall be used on all reports and correspondence relative to the A/E contract.

Correspondence regarding invoicing shall be mailed to the address in paragraph 5 of Section G of the solicitation and marked for the attention of The Contracting Officer.

Correspondence pertaining to changes in scope, schedule or cost of the contract of a contract task shall be addressed to the Contracting Officer, NIH, Acquisition Branch C, 9000 Rockville Pike, Building 13, G800, Bethesda, MD 20892.

Reports of all conference and telephone instructions shall be prepared and provided to the Project Officer within five (5) days from the date of such conference or telephone instructions.

1.7 Construction Contract and Work Request Numbers

The Work Request number is provided in the statement of architect/engineer services (scope of work) for individual tasks. The Work Request number shall appear on each sheet of the project drawings; the project title and work request number shall appear on each sheet of the project specifications.

1.8 Quality of Work

Work shall be prepared in accordance with current criteria established by NIH and shall be in accordance with the best engineering practices. Submittal materials shall be reviewed by the A/E before being submitted. The A/E shall coordinate the design of all disciplines and shall perform a quality review to ensure that the project is buildable and that no conflicts exist between the project drawings, the project specifications, and existing conditions. Reviews shall be made by qualified persons other than those preparing the documents. Names of the reviewers shall appear on project drawings, computation sheets and other submittal materials.

The A/E's work will be reviewed by various organizations within NIH to ensure compliance with the project scope, program and applicable Government requirements and criteria. While technical comments may be provided by the Government, the technical accuracy of the project and the coordination between disciplines is solely the responsibility of the A/E.

1.9 Changes In Scope

The A/E is reminded that A/E contract responsibility is directly to the NIH Contracting Officer and at no time shall changes in the scope be made at the direction of anyone but the Contracting Officer. During the progress of the work, the A/E may expect minor changes in design criteria and shall make necessary adjustments in the design accordingly.

Where changes to the scope of work are required, the A/E will be authorized in writing, and appropriate modifications will be made to the A/E contract.

The A/E shall be responsible for the best engineering solution which provides a complete and usable facility within the "Design-To Cost" and/or any statutory cost limitations as set forth in the scope of work for individual tasks. The A/E shall immediately notify the Project Officer, in writing, if established cost limitations appear to be inadequate to accomplish the project scope.

1.10 Evaluation of A/E Performance

Upon completion of the design phase, the Project Officer will prepare an evaluation of the A/E's performance. Another evaluation, judging the A/E's design and performance during construction, will be prepared at the completion of the project.

Interim evaluations may be prepared as necessary. Copies of outstanding and/or unsatisfactory evaluations will be sent to the A/E.

Copies of all evaluations will be made available to future selection boards at NIH and will be made available to other Federal agencies for their use.

1.11 Computerized Graphic Design

Computerized graphic design systems have demonstrated the ability to increase design productivity by allowing engineers and architects to spend less time drafting, allowing more time for analysis and decision making. Furthermore, the use of computerized graphic systems should result in a reduced level of change orders, claims and cost of rework due to design errors. A/Es performing work for NIH are encouraged to utilize computerized graphic design systems. When using computerized graphic design systems, the A/E shall submit the database to the Government as indicated in Section 3.6.2C.

SECTION 2: GENERAL DESIGN REQUIREMENTS

2.1 General

It is NIH policy to retain the best-qualified professionals and to accomplish designs according to NIH criteria within scope, fiscal and legal constraints.

2.2 Quality of Architectural/Engineering Design

Excellence in architectural design is a prime goal of the Government. Accordingly, quality architectural design that is functional, environmental and energy conscious and compatible with existing elements, is required for all projects. Good architectural design is proportional to professional design effort, not to project cost. Applied or cosmetic architectural design is not cost effective and is unacceptable.

An acceptable quality engineering design must provide appropriate functional facilities at the lowest practical construction cost, with due consideration for economy in maintenance and operation. The construction materials must be of a quality that is consistent with the intended use of the facility and reflect local availability and construction skills. New materials and methods should be considered, but only if they provide an economic or functional advantage.

2.3 Design Quality Assurance/Quality Control (QA/OC) Program

In an effort to reduce construction change orders due to design errors and omissions, The NIH has initiated a Design Quality Assurance/Quality Control Program. The A/E shall develop, execute and demonstrate that the project drawings and specifications have gone through a rigorous review and coordination effort.
The requirements are as follows:

- **A.** With the Fee Proposal: The A/E shall provide an outline of the action that the firm will take on all work under this contract, along with its associated fee.
- **B.** Two (2) weeks after receiving a record of call: The A/E shall submit a detailed Design QA/QC Plan for the task, describing each step that will be taken during the development of the various phases of the design. Each step should have an appropriate space where a senior member of the firm can initial and date when the action has been completed.
- **C.** With each 100% Submittal: The A/E shall submit evidence that the design was executed in accordance with the task QA/QC Plan and that a thorough review and coordination have been completed.

2.4 Field Investigation and Site Visits

The A/E shall visit the project site only after making arrangements with the Project Officer. Site investigations made by the A/E shall include a thorough check of all conditions, dimensions and locations in the area, which might affect and/or be affected by the proposed work. All available information relative to existing conditions at the site of the construction will be made available when requested by the A/E, who shall evaluate and verify all information. The A/E shall NOT rely solely on existing information, such as utility or record drawings, for the new design. Field investigation, whether for a new project or renovation, shall be thorough and detailed to

ensure accurate representation of existing conditions. Poor, inadequate field investigation and site visits result in unsatisfactory design and extended costs and time for construction.

The A/E, as part of the site investigation, shall investigate and identify potential hazardous materials. When hazardous materials are discovered (i.e., asbestos, PCBs, lead, etc.) the A/E shall address proper abatement of hazardous materials in the design.

2.5 Provision for the Handicapped

All facilities which are open to the public or to limited segments of the public or which may be visited by the public in the conduct of normal business shall be designed and constructed to be accessible to the handicapped. The A/E shall use Uniform Federal Accessibility Standards (UFAS) to determine accessibility requirements for the handicapped.

2.6 Metric Design

All project specifications and contract drawings shall use metric dimensions. Metric designs shall be in accordance with the U.S. General Services Administration, Public Building Services AMetric Design Guide@ (published July 1993). Drawings and specifications may use dual dimensions or soft metric. The A/E is encouraged to use hard metric dimensions whenever products are readily available in metric dimensions and it is practical to use the metric product. Drawings may be scaled using metric scales or traditional English scales with converted soft metric dimensions.

2.7 Landscape Design

When a project requires landscaping, separate drawings shall be prepared. The following information shall be provided in the project drawings and project specifications:

- **A.** Location of plant material
- **B.** Extent of material
- **C.** Plant and planting details
- **D.** Plant material list, including quantity and sizes
- **E.** Provisions for protection during construction
- **F.** Month(s) of the year when the Contractor will be allowed to plant

The design shall be consistent with the NIH landscape master plan and with the landscaping of the surrounding area.

2.8 Architectural Finishes and Signage

The A/E shall provide when required by the Statement of Work, as a minimum, an architectural finish board(s), which shall display all proposed building, finishes (both exterior and interior). This shall include paint colors, samples of ceramic tile, floor tile, carpeting, plastic laminate, brick and precast concrete, etc. The finish board(s) shall be of manageable size (approximately 14 inches by 18 inches; not larger than 20 inches by 30 inches). The architectural finish board(s) is a reference item; it does not replace detailed written documentation required in the construction bid documents.

When Interior Design Services are required, the A/E shall follow the procedures outlined in Appendix II. The A/E's interior designer shall coordinate all the architectural finishes and signage.

2.9 Design Criteria

Projects shall be designed in accordance with the current NIH criteria, except when a written waiver is granted.

Current NIH criteria are found in the "NIH Design Policy and Guidelines" and NIH Guide Specifications. The A/E is expected to use the most current NIH criteria in effect at the time of task award.

2.10 Basis of Design Report

To ensure that projects are developed in conformance with established NIH criteria and project requirements and that they are within authorized scope and funds, a Basis of Design Report shall be submitted at the 35% submission of each project. The Basis of Design Report shall describe all aspects of the project by analytical methods of evaluation for selecting building systems. A detailed narrative report shall be submitted to justify each system selected, (e.g., building orientation and siting, construction systems, materials of construction, fenestration, foundation, framing, electrical, mechanical, etc). The report shall list all major design criteria (e.g., Design Manuals, Handbooks, etc.) used and shall present justification for any proposed departure from the criteria. A recommended outline of the Basis of Design Report is detailed in Appendix I.

2.11 Contractual Quality Control (CQC)

Contractor Quality Control is a system whereby the Construction Contractor provides significant and specific inspection, testing, and documentation to satisfy both the Contractor and the Government that the work being performed meets the requirements of the project drawings and specifications.

Contractor Quality Control requires particular care and attention by the A/E in the formulation of the construction contract documents. Requirements for Contractor Quality Control are contained in DCB's Operating Manual Vol. III. The A/E shall meet with the P.O. to discuss the specific requirements of CQC, prior to the design development (35%) Submission. Section 5.9 provides additional information on CQC.

2.12 Fire Protection Services

The A/E shall have on staff or retain the services of a registered Fire Protection Engineer. The engineer must be directly involved in the design and review of all fire protection systems, life safety features and construction criteria for the project. At the 35% submission, the registered Fire Protection Engineer shall prepare a report as outlined below.

Furthermore, the engineer shall review the 100% submission of plans and specifications and certify in writing that the design is in compliance with all applicable criteria.

2.12.1 Design Information

The following information, as it pertains to the specific project, shall be provided at the 35% submission. This information can be included with the calculations under the heading of "Fire Protection", or in a separate report:

A. The occupancy classification; height and area calculations; type of construction; required building separation or exposure protection; rating of structural components; classification of interior finishes; location of fire-rated walls and partitions; description of construction (e.g., spray-applied fire proofing on beams and columns, but not on the underside of the floor slab; how the space between the curtain wall and the flooring will be sealed to maintain the hourly rating of the floor; etc.).

B. Exit information, including the number of exists, type of exits, exit travel distance, total exit width, total occupant load, common path of travel, etc.

C. Description and location of all fire extinguishing and/or detection systems and fire alarm systems to be provided.

D. Location of required fire hydrants (new and existing).

E. Identification of all hazardous areas (chemicals, fuels, etc.) and the indication of how these hazards will be protected.

F. Summary of the data obtained from the water flow test and determination of the adequacy of the water supply (even for facilities without sprinkler protection), along with sketches of the water distribution system.

G. For facilities that will be provided with automatic sprinkler systems, provide the following information:

(1) Description of sprinkler system(s);

(2) The area(s) that will be protected, the classification of the area(s) and the type of system protecting these area(s);

(3) The design density, demand area and hose stream allowance to be specified for each different area;

(4) The method for connecting the sprinkler system to the fire alarm system, as well as the method of zoning the systems and a description of any power disconnects, pre-alarms, etc., that will be required;

(5) Hydraulic calculations showing that the water supply is adequate for the suppression systems and hose stream demand. For hydraulic calculations, deduct the hose stream requirement at he point of connection to the existing distribution systems or the closest fire hydrant, whichever is closer to the sprinkler riser. If these demands cannot be met, the A/E shall provide the proper solutions to the problem of an insufficient water supply (e.g., fire pump(s), and/or water storage tank(s), etc.). Provide hydraulic sprinkler calculations, as required in NFPA 13, of the expected demand area(s) to reflect the system demand; the calculations approximating the demand and pressure requirements are not acceptable.

H. Sketches where appropriate (e.g., water distribution system, sprinkler demand areas, show hydraulic reference points for the hydraulic sprinkler calculations, existing information, travel distance, common path of travel, etc.).

I. Information on all existing fire detection and suppression systems, for existing buildings, i.e., type of systems; area of coverage; make and model of all equipment. For fire alarm systems, provide the following information (at a minimum): number of spare zones and spare spaces for modules, capacity of control panel(s), list of existing fire alarm zones, list of outputs, number of audio/visual circuits, standby battery capacity, indicate the working order of each system, etc.

2.13 Design Reviews

When requested, the A/E shall provide quality assurance, coordination, code compliance, and constructability reviews of contracted or in-house designs. The review may encompass some aspect of the design, or all design submissions. The requirements of the reviews will be specified in the task scope of work. Design comments shall be submitted on the NIH review comment forms.

2.14 Special Studies

When requested, the A/E shall complete special technical studies in support of construction projects, building operations and maintenance, energy conservation, and environmental compliance. These studies include but are not limited to: feasibility studies, site selection recommendations, system maintenance recommendations, trouble shooting and evaluating building and utilities systems, evaluation of design criteria, post occupancy surveys, etc. The requirements of the studies will be specified in the task scope of work.

SECTION 3: A/E CONTRACT REQUIREMENTS

This section defines the various items of work required by the Statement of Architect/Engineer Services, as listed in the "Task Requirements List".

3.1 Design Quality Assurance/Quality Control Program

The A/E shall submit a quality assurance/quality control plan for work under the contract. The plan shall be specific to the contract and written in a report form as outlined in Section 2.3.

3.2 Concept Submission

3.2.1 Draft Concept Submission

3.2.1.1 Objective
To provide three schematic level project designs that proposes separate and distinct solutions for the project requirements.

3.2.1.2 Content
A. Site plan of each scheme
B. Floor plans at the appropriate scale showing departmental areas and adjacencies
C. Sketch elevations or perspectives of buildings
D. Gross area tabulations
E. Description of various design features
F. Cost estimates based on engineering systems.

3.2.1.3 Procedures
A. The A/E shall prepare and present to the Government a presentation of the Draft Concept design.
B. If the submission is determined to be inadequate, it will be returned for resubmission.

3.2.2 Final Concept Submission

3.2.2.1 Objective
To provide a schematic level project design from which the Government can determine the adequacy of the design, the functional arrangements, project costs and adherence to criteria.

3.2.2.2 Contents
A. A vicinity plan, showing existing and new topography and utilities, access roads, extent of parking and site circulation, as well as relationships to other buildings,
B. Floor plans at appropriate scale, showing all walls, openings, rooms and built-in features,
C. A design analysis, outlining options considered in each discipline and reasons why the system or design presented was chosen,
D. Discussion of the proposed approach to satisfy design requirements for all building systems,
E. Building sections and typical wall sections, showing floor-to-floor heights,
F. Elevations, showing fenestration and exterior building materials,
G. Space tabulation of net square footage, by room, and total gross square footage,
H. Cost estimate based on engineering systems. Lump sums will not be acceptable. A design contingency may be used to account for the preliminary nature of the design.

3.2.2.3 Procedures
A. The Concept Submission shall be submitted to the P.O. for review. The P.O. may request the A/E to distribute submission copies to other departments of NIH.

B. The A/E shall prepare and present to the Government a presentation of the final concept design, with drawings mounted on foam core board.
C. The A/E shall submit record copies of items as indicated in the Statement of Work for the specific task.
D. If the submission is determined to be inadequate, it will be returned for resubmission.

3.3 Design Development (30 %) Submission

A submission of the A/E's project documents and supportive design calculations which clearly show the project design, the A/E's knowledge of NIH criteria, formats and conventions, as well as adherence to the project scope and previously approved submissions.

3.3.1 Objective

To provide the Government with project drawings, calculations cost estimate and outline specifications sufficient to evaluate the design, its adherence to systems selection criteria and the A/E's ability to interpret the criteria and prepare biddable documents.

3.3.2 Contents

A. PROJECT DRAWINGS:

A.1. SITE DESIGN

Preliminary site plans, at a minimum 1"=20'-0" scale (1:250 metric), will include location of structures, parking lots and structures, roads, service areas, walks, plazas, tree groupings, buffer landscape screens, etc., coordinated with the latest NIH Master Plan. A preliminary grading plan of the entire area and areas adjacent to or surrounding the site work. A preliminary grading plan indicating spot elevations at structure corners, entrances, areas all first floor elevations and other critical areas must be provided. The preliminary site plan shall clearly indicate the number, size, location and type of trees to be removed.

Preliminary utility plot plan showing the existing and the proposed work for sewers; water distribution loop; gas distribution mains; chilled water distribution lines; underground electrical circuitry; telephone service; inter-building signal system (fire alarm, CCTV, radio, and security system); and steam distribution loop shall be provided. Include on the utility plot plan the location of existing and proposed utilities from the NIH Master Utilities drawings. Verify that building requirements do not require larger size pipes than sizes proposed on the NIH Master Utilities drawings. The A/E shall be responsible for field verification of all plans and drawings. The preliminary plan should indicate proposed areas for site storage of excavated materials, erosion control and drainage during construction;

Contractor staging area; site access or any other significant site considerations during

construction of the proposed facility.

A.2. ARCHITECTURAL DESIGN

Architectural floor plans shall be double lined and scaled (minimum 1/16"=1'-0, 1:200 metric) identifying existing and new construction. All rooms, including equipment rooms, signal, electrical and telephone closets, mechanical shafts and spaces, and all circulation corridors, stairs, elevators (personnel and service), and automatic conveyances shall be noted. Exterior dimensions for determining the total gross area of the building are required.

A.3. STRUCTURAL DESIGN

The structural design plans shall include footings, foundation walls, walls, and if required subdrainage, dampproofing and/or waterproofing, if any; framing plans including walls, columns, girders, beams and joists. For a new building a comparative cost analysis of a minimum of two structural framing systems shall be included with the cost estimate submittal.

Generally the comparisons will be limited to reinforced concrete and structural steel framing systems. Studies should compare these framing systems based on design of a typical cross-sectional element through the structure from roof to foundation and full width and length of structure. For the renovation of existing buildings, assure that proposed occupancy load will not exceed design loads and proposed penetrations through structural members are at suitable location.

A.4. HVAC/PLUMBING DESIGN

The minimum Mechanical design submittal should include single line drawings conveying design intent and scope of new systems, distribution layouts for HVAC, plumbing including fire protection systems; single line ductwork and piping layouts, block layouts of mechanical spaces, and block load calculations for space cooling and heating. Energy analyses for at least three HVAC systems must be considered. Verification of the plumbing system capacity, schematic diagrams for system modifications, and connected load requirements for all major utilities shall also be described.

A.5. ELECTRICAL DESIGN

The electrical design shall include one-line diagrams of the proposed electrical system; any high voltage circuitry or transformation required; preliminary sizes of the major components of the one-line diagram, including the emergency and high-voltage systems; tentative locations of primary distribution switchgear, engine-generator sets, unit substations, manholes, primary transformers; and other major items. Where space or location considerations could be critical, show tentative layouts of components; Floor plans indicating location and type of lighting fixture to be used in each space along with any special feature such as underfloor raceways, power outlets, exit lights, fire alarm, and signal system devices; Connected load requirements.

B. THE BASIS OF DESIGN REPORT:

The basis of design report shall describe all aspects of the project by analytical methods of evaluation for selecting building systems. A narrative report shall be submitted to justify each

system selected. The report shall list all major design criteria used and present justification for any proposed departure from the criteria. Appendix I provide a recommended outline for the basis of design report.

C. OUTLINE SPECIFICATIONS:
The A/E shall submit a general outline of project specifications in marked up format. Note: Proprietary items of work shall not be used without prior approval by the Government. Request for and justification of proprietary items must be included with the 35% submission.

D. PRELIMINARY COST ESTIMATE:
The A/E shall prepare cost estimates using the formats specified in the task SOW. Quantity takeoffs shall be used for sufficiently developed areas and system costs for, as yet, undefined areas.

E. DESIGN CALCULATIONS:
The A/E shall submit preliminary design calculations for main building systems and major equipment as applicable to each discipline. Mechanical (HVAC) calculations shall be complete including calculations necessary to justify equipment shown in contract documents. Mechanical calculations shall include, as a minimum, indoor and outdoor design conditions, U-Value calculations, plumbing calculations, cooling and heating loads and other calculations necessary to support 35% design.

F. PRELIMINARY ARCHITECTURAL FINISH BOARD (S):
Submit one set, showing samples of proposed finishes for building elements.

G. DRAFT STORMWATER MANAGEMENT AND EROSION//SEDIMENT CONTROL REPORTS:
Submit when required by the project scope.

H. FIRE SAFETY
The A/E shall prepare a narrative summary outlining the strategy for meeting the requirements of the Life Safety Codes. Plans to indicate connection to existing utilities and any upgrade of utilities as required to achieve the fire protection strategy is also required along with the location of major system tie-ins.

I. SPECIAL COORDINATION AND UTILITY CROSS SECTIONS
Areas with a potential for coordination problems with the trades such as corridors, mechanical rooms and other areas, shall require cross sections a minimum **2**"=1'-0" scale (1:25 metric), properly depicting utility placements. All trades shall be indited including structural members both new and existing.

J. CONSTRUCTION SCHEDULE
A construction schedule, in bar chart form shall be submitted.

K. REVIEW COMMENT FORMS
The A/E shall submit the Review Comment Forms indicating actions taken to resolve the comments on the selected scheme.

3.3.3 Procedures

A. The A/E shall deliver to the P.O. the documents indicated in the Statement of Work. The P.O. may request the A/E to distribute submission copies to other departments of NIH.

B. The basis of design report, outline specifications, preliminary cost estimate and preliminary calculations, shall be submitted in brochure format.

C. The Government will review the submission. Comments will be provided using the NIH comment form. The A/E shall obtain the review comments from the P.O. and shall resolve and incorporate the comments into the next submission. The A/E shall respond to all comments with detailed responses on the comment form, indicating what action will be taken to resolve each comment. If a comment is not incorporated, the A/E shall provide a written rationale for not incorporating the comment. These responses must be submitted within 3 weeks after the return of the government review.

D. If the submission is determined to be inadequate, it will be returned for re-submission. If comments from previous submissions were not properly resolved, the submission is considered inadequate.

3.4 Progress (70%) Submission

A submission of project documents and supportive material, which clearly show the development of the project to the 70% stage. No single discipline shall be less than 70% complete. All design calculations shall be submitted and revised as necessary.

3.4.1 Objective

To provide the Government with project drawings, cost estimate and project specifications sufficient to evaluate the A/E's adherence to detail and systems design criteria and to ensure that comments made during previous reviews were understood and incorporated.

3.4.2 Contents

A. PROJECT DRAWINGS:

A.1. SITE PLANNING

The A/E shall prepare a complete grading plan of the altered areas indicating the grade elevations at each of the structure's corners, entrances, and other critical areas. First floor elevations will be indicated. Profile and alignments of all new roads; concrete paving joints, a staking plan showing locations of structures and equipment at grade, dimensions of parking lots, service courts, landscape structures; location of inlets, and other major elements of site design will be noted on a plan.

Construction sign; locations, and the contractor's staging area should be outlined. Planting plan-showing location of all trees, shrubs, and lawns, with a complete planting list and planting details will be required. Landscaping shall be in accordance with the landscape section of the NIH Master Plan.

A separate utility plot plan showing the proposed trunk sewers, water distribution loop, and gas distribution mains, steam distribution, chilled water lines, underground electric, including locations of connections to existing utility systems shall be included. If necessary, include the location and arrangement of water treatment equipment.

A.2. ARCHITECTURAL/INTERIOR DESIGN

The working drawings should be not less than 70% complete. The entire project site for reference must be portrayed on a single sheet if possible at no less than 1/16" (1:200 metric) scale with all room titles. Room titles and numbers; door sizes, types, and swings shall be provided indicating detailed 1/8" (1:100 metric) scale floor plans. Fixed and portable equipment and plumbing fixtures indicated and identified. Exterior elevations, if applicable, at 1/8" (1:100 metric) scale (1/16" [1:200 metric] scale should be used to insure full elevation on one sheet) showing story heights, fenestration, finish materials, penthouses, architectural screens, roof enclosures, skylights, and stacks is required. Show finished grades and relevant existing grades at entrances, platforms, and ramps. Room finishes symbols shall be located on the 1/8" (1:100 metric) scale floor plans only and referenced to separate sheet in the contract drawings. Provide General notes and other schedule information as required. Indicate fire partitions, smoke partitions, safety and protective elements (including lead linings and radio frequency shielding). One quarter scale plans and elevations of special rooms will detail layout and identify equipment, dimension casework and any special features. The A/E shall prepare reflected ceiling plans indicating all ceiling mounted equipment, lighting fixtures, air diffusers, registers, sprinkler heads etc. All unique situations particular to the project should be detailed through drawing and, if necessary, specification.

A.3. STRUCTURAL DESIGN

The A/E shall prepare scaled drawings showing tentative sizes of columns, beams, slabs, and foundations. The structural drawings shall be complete enough to correlate with architectural and mechanical features. Construction features should be defined through sections and details. The foundation system (spread footings, caissons, grade beams, etc.) together with support information on size, spacing and elevation of reinforcing for typical footings or the size, type, and depths of piles. Subdrainage systems, if required, supported by the location and extent of tile drains, if anticipated a sump pump system and whether Dampproofing and/or waterproofing

systems are to be utilized must be shown. Preliminary solutions of special foundation problems such as the shoring or underpinning of adjacent existing buildings must be documented.

The framing plans shall show walls, columns, girders, beams, open web steel joists, concrete joists, waffle slabs, and space frames; type, extent and direction of framing for structural floors, and lintels in the story below for each floor. A consistent and nationally recognized marking system must be employed, and typical beams, slabs, and columns shall be marked and referenced to appropriate schedules for size and reinforcement.

Schedules for slabs, beams, and columns, along with detail information relating to each, shall be indicated in each schedule to demonstrate the type of final presentation. Attention shall be given to special notes required to clarify lengths or arrangement of reinforcement.
All necessary structural details shall be shown on the plans. This includes details of the basic floor framing including modifications for large openings, nonstandard beam to column framing, concrete stairs, exterior wall construction and anchorages.

All structural notes referring to concrete design stresses, design codes, standard structural steel connections, provisions for Standard Specifications for Open Web Steel Joists of the American Institute of Steel Construction, allowable foundation bearing capacity and compaction requirements, etc., shall be furnished.

A.4. MECHANICAL DESIGN

Elevators, dumbwaiters, and transport systems shall be addressed.
Drawings for elevators, dumbwaiters and transportation systems shall be included. Drawings shall show materials, sizes, details, space conditions, etc., of hoistway enclosures, pits, cabs, entrances and machine rooms. Show dimensional locations of elevator cars, entrances and counterweights.

Location of hoistway vents, locations and dimensioned size of trap doors for lowering overhead machines and location of steel beams in machine room ceilings over trap doors shall be noted on the drawings. Dimensioned sections through hoistway, pits, and machine rooms and dimensioned heights of hoistway entrance pits shall be shown. Complete details of hoistway entrances for elevators and dumbwaiters shall also be included.

General arrangement of machine room equipment shall be shown.

Special details of transport systems, i.e., floor trenches, overhead rail supports, floor and/or overhead track layout, special cart design, etc., shall be detailed and located in plan.
Complete duct and pipe sizing shall be shown for air conditioning and refrigeration systems. Sizing calculations for duct and water piping system mains and principal branches shall be shown.

Submit calculations for required sound attenuation of major fans.

Double lines will represent all ducts and piping systems 8" and larger. Single lines will represent piping systems 6" and smaller. Clearly indicate in more than one spot, the sizes of ducts and piping. Locate fire, balancing, and smoke dampers. Locate smoke detectors within ducts and air

handling units.

Equipment schedules shall be shown and include air conditioning and ventilating units, refrigeration elements, cooling towers, fans, pumps, etc. Submit equipment selections based on manufacture's catalog data. Submit calculations for fan pressures and pump heads.

Control diagrams shall be shown and include, where applicable, conditioned air systems, exhaust systems and the air conditioning refrigeration systems. Diagrams shall be complete with legend and description of operation.

All unique details shall be explained on the drawings through elevations, sections, and legends. Sections shall be shown on the drawings through equipment rooms, and both typical and complicated ductwork. Show sections through walk-in coolers, freezers and cold rooms detailing insulation of floors, walls, and ceilings. Refrigeration systems, schedules, schematic piping and wiring diagrams, and automatic controls shall be completed.

One line flow and control diagrams and control for systems including air-conditioning and ventilating duct systems, chilled water and condenser water system, hot water, and steam piping system including low quantities shall be diagramed.

Steam generation and distribution systems may be required. The drawings shall include schematic of building steam distribution system coordinated with flow diagrams required by sections on air conditioning and steam generation. Provide steam distribution plot plan for outside underground distribution systems.

Calculations shall be submitted as applicable, on: boiler, condensate tank, and feedwater heater capacities and storage capabilities. Capacity and discharge plus pressure, and NPSH for condensate transfer and boiler feedwater pumps, along with capacity and discharge pressure, and NPSH, pressure reducing valves, safety valves, oil tank and pump capacities, gas system capacities, blowdown system capacities shall be shown.

The combustion air supply for boiler plants including ventilation and heating systems shall be indicated.

Plans of the plumbing systems shall include piping locations and sizes; the locations and sections of pumps, compression tanks, therapeutic pool equipment; and blowers, if required in project; location and piping of all oxygen, nitrous oxide, medical compressed air, shops compressed air, fuel gas, vacuum outlets, etc.

A.5. ELECTRICAL

Transformer vaults and pad mount transformer locations shall be indicated.
Location of the main telephone frame room plus all electrical and telephone closets shall be shown on the plan.

An electrical plot plan shall be submitted locating primary feeder and where it accesses the project.

One-line riser diagram of the electrical power distribution system and the auxiliary power system connection shall be included on the drawings.

Locations of primary distribution switchgear, engine generator sets, unit substation, and other major items of equipment shall be indicated.

Floor plans specifically floor electrical locations shall include room number and titles and area function and locate the majority of lighting fixtures and outlets for power and signal systems along with tentative layouts of special systems.

Typical lighting calculations shall be submitted together with a description of the proposed method for short circuit and voltage drop calculation.

B. CONSTRUCTION SCHEDULE

An updated construction bar chart schedule shall be submitted together with a narrative report. The narrative report shall highlight long lead items, together with their anticipated delivery times. The report shall also include any instructions as to scheduling, phasing, or similar information needed to achieve optimum construction efficiency thus eliminating or minimizing disruption to NIH personnel and operation.

C. LIST OF SPECIAL OR GOVERNMENT FURNISHED MATERIAL

A list of all Government furnished material and/or Government Furnished Equipment (GFE) that requires special manufacture, delivery or storage before installation shall be noted.

D. SPECIAL COORDINATION UTILITY CROSS SECTIONS

Areas with a potential for coordination problems with the trades such as corridor, mechanical rooms and other areas, shall require cross sections a minimum 1/2"=1'-0" (1:25 metric) scale, properly depicting utility placements. All trades shall be indicated including structural members both new and existing.

E. QUALITY ASSURANCE

The A/E shall review the developed plans and specifications using an approved checklist prior to the Construction Phase Submission. The A/E's project manager shall sign the checklist indicating that this review has taken place.

F. COST ESTIMATE

Cost estimates shall be developed using quantity takeoffs. Costs for the prosecution of work shall be broken down into labor and material costs by trades and by specification section. See the Scope of Work for required format. Units of measure shall be metric unless directed by project officer.

G. DESIGN CALCULATIONS
Submit complete calculations on all aspects of design for each discipline.

H. REVIEW COMMENTS FORM
Submit the 30% Design Development Review Comment Forms indicating what actions have been taken to resolve the comments.

I. PROJECT SPECIFICATIONS:
Shall be printed single-spaced, in draft form. Modifications to guide specifications shall be highlighted.

3.4.3 Procedures

A. The A/E shall deliver to the P.O. the documents indicated in the Statement of Work. The P.O. may request the A/E to distribute submission copies to other departments of NIH.

B. The Government will review the submission and comments provided using the NIH comment form. The A/E shall obtain the review comments from the P.O. and shall resolve and incorporate the comments into the next submission. The A/E shall respond to all comments with detailed responses on the comment form, indicating what action will be taken to resolve each comment. If a comment is not incorporated, the A/E shall provide a written rationale for not incorporating the comment. These responses must be submitted within 3 weeks after the return of the government review.

C. If the submission is determined to be inadequate, it will be returned for resubmission. If comments from previous submissions were not properly resolved, the submission is considered inadequate.

3.5 Contract Documents (100%) Submission

A submission of A/E's construction documents and supportive materials, which can be considered by the Government as biddable documents ready for advertisement. All approved corrections to the 70% submittal review shall be incorporated into the design documents.

3.5.1 Objective

To provide the Government with construction documents which are technically complete, in the proper format, biddable, adequate in design detail, constructible, coordinated between all disciplines and adhering to the project scope.

3.5.2 Contents

A. Project drawings:
The A/E shall submit drawings, which are 100 percent complete.

A.1. SITE PLANNING AND LANDSCAPING
Contract drawings, specifications, and all related documents shall be complete. The Site work estimate shall be shown separately in the overall construction cost estimate.

A.2. ARCHITECTURAL/INTERIOR DESIGN
The Architectural contract drawings shall include completed plans, elevations, details, schedules, and the materials and colors of all finishes for all rooms and areas. A color and finish board incorporating physical samples of the materials and colors used other than those identified in the Master Paint Color shall be submitted for approval. Identify each sample, including 3" x 5" carpet swatches, by the manufacturer's name and color designation and by the color designation used in the specifications. Affix the samples to a 30" x 40" size illustration boards. Label each board and the name of the project A/E.

Provide complete installation plans for furniture, furnishings and related equipment. All items, new and reused, shall be numbered and cross-referenced to details and specifications.
Final detailed drawings of any special and/or unique design items, floor coverings plans, window treatment plans/elevations, finish plans, schedules, art, signage and architectural graphics location plan, interior plan, and interior planting plan shall be submitted.

Conduct and coordinate actual selection of furniture/ furnishings/equipment using the current GSA Schedule(s) and mandatory sources. Check schedules to assure that the schedule will be active for a reasonable time to permit the Government to place the order. As part of this final selection modify, where appropriate, the sample boards to show the now current items on the GSA schedule. Provide a cost estimate to confirm that the project budget allocated to such items of furniture, etc., is still valid. Coordinate the furniture plan with the specifications. Use the Government furnished procurement forms for special instructions as to the placement and/or installation. Provide two loose leaf 3-ring binders containing floor plans with items identified, numbered, scheduled, and cross referenced; finished materials, cuts of furniture, furnishings and equipment for each individual space.

A.3. STRUCTURAL
Structural plans, elevations, sections, details, schedules, boring logs, general notes necessary to complete the drawings, and completed computations shall be submitted.
The foundation(s) footings, foundation walls, area walls, and the subdrainage, dampproofing, or waterproofing shall be addressed and indicated by plan. Heavy full lines shall show footings. Normal width lines shall show walls. Finished and unfinished spaces shall be clearly marked and grades noted for each portion. The elevations of the bottoms of the footings shall be indicated. In the case of caisson foundations the elevation of the bottom and size of bells shall be indicated. Pipe sleeves for all pipes passing through the footings or exterior walls below grade shall be shown. Show all pits, clean out manholes, and trenches. Show typical details of the foundation walls, footings, subsoil drainage, dampproofing, waterproofing, and area walls shown on the foundation plan, if there is sufficient space. Special details shall also be shown as needed for clarity of construction. Include all concrete member dimensions and size, spacing and location of

reinforcing.

Detail drawings essential to clarifying the design and construction features, both temporary and permanent shall be included.

Elevator pits shall be shown and dimensioned on the foundation plan. The dimensions shall be carefully correlated with those given on the architectural plans.

Provisions shall be made for installing or replacing major electrical and mechanical equipment, after construction is completed, through an areaway, removable panel, or by similar means. These provisions shall be noted on the drawings. In waterproofed buildings, the method employed for replacement of major equipment should not require removal or breaking of the waterproofing.

For framing plans showing the walls, columns, girders, beams, structural floors, lintels in the stories below, and the design live loads for each floor, detailed information shall be placed upon the framing plans as follows: The depth, weight, and type of steel beams, the size and reinforcing (size, number, and type of bars) of concrete beams, and the thickness and reinforcing (size, spacing, and type of bars) of concrete slabs shall be given on the framing plan. The location of the tops of the structural slabs and steel beams shall be indicated with reference to the corresponding finished floor surfaces. Reinforcing bar sizes shall be indicated by number. Schedules should be used to indicate the dimensions and reinforcing of concrete members. Reinforcing of flat slabs is preferably shown in plan.

Designate the types of structural steel beams indicated in accordance with the abbreviations listed in the current Manual of the American Institute of Steel Construction. Field connections shall be sized and indicated (bolted or welded). Non-standard connections shall be detailed.
Elevator hatches shall be shown and dimensioned on the framing plans. The dimensions shall be carefully correlated with those given on the architectural drawings. Overhead clearances of elevator shafts shall be checked carefully. A notation shall indicate that the machine floor slab is to be poured by the construction contractor after the machine support beams are in place.
Provide any necessary details or schedules pertaining to the framing plan on the same sheet as the plan if space permits. Otherwise, the notes on the plan shall indicate the sheet numbers of the drawings on which they are to be found. If the column schedule is placed on a separate drawing, there shall be a note on each plan referring to that drawing. Column schedules shall show the load and moment for each column for each story.

Where the construction of trusses is sufficiently simple to be explained by line diagrams, such diagrams should be used. The girder diagrams shall contain the uniform and concentrated loads, reactions, girder material, and spacing. The truss diagrams should contain the main material and the stresses.

Details which are required to show clearly the design and construction features of the project shall be shown. Details, typical and special, required to indicate the structural work shall be shown as noted above in connection with the foundation and framing plans.

A.4. MECHANICAL DESIGN
The following items shall be addressed for the 95% submission of construction documents:

A.5. HVAC AND REFRIGERATION

The A/E shall submit completed drawings and calculations showing duct and pipe sizing and system layouts. Complete equipment schedules, and control diagrams must accompany the drawings.

All details, elevations, sections, and legends shall be shown on the drawings. All critical points in the corridor system shall be indicated through section. Indicate the location and space allocation intended for all ducts, piping, and larger conduits regardless of trade.

HVAC drawings for air conditioning systems and all support utilities shall be provided. The submittal shall be complete with calculations and shall be fully coordinated with the specifications.

A.6. STEAM GENERATOR AND DISTRIBUTION

Completed drawings and calculations based on confirmed load requirements and defining equipment coordinated with plans and piping arrangement shall be submitted. This submittal shall include, as a minimum, a completed schedule and symbol sheet defining all equipment to be applied; flow sheets with all valves and specialties included; and piping sizes; lower and upper boiler room floor plans, piping, and hangers; roof plan(s) showing all roof top equipment and penetrations; sections and elevations as necessary to coordinate piping and equipment layout for clearances, support, maintainability, and to coordinate equipment with structural, architectural, electrical, and plumbing systems.

Completed plans including profiles, expansion loop(s) bend(s), plus calculations, and specifications shall be submitted.

A.7. PLUMBING

The A/E shall submit completed drawings and specifications. Drawings shall indicate the size and location of the piping, legends, notes, details, plan views, sized riser diagrams and equipment.

A.8. SANITARY

Completed drawings, as a minimum, shall include invert elevations for the sewage systems, legends, notes, details, site plans, sized equipment, profiles of sewers over 200 feet in length including original and finished grades, manholes, inlets, invert elevations, pipe sizes, crossing of roads and walks, locations, and elevations of other existing, and proposed underground utilities with pertinent data.

A.9. ELECTRICAL

The A/E shall submit completed drawings with specifications indicating circuiting of all systems. Indicate locations where possible conflicts with other trades could occur. Sizes and fault currents on all switchgear, switchboards, and panel boards shall be indicated electrical one-line diagram. The one-line diagram shall also include all feeder and transformer sizes.

B. CALCULATIONS
Computations and engineering data including basis of design and system narratives are required in the submittal. Provide a separate volume for each discipline with an index, numbered pages, and bound with removable metal fastenings.

Mechanical data shall contain equipment selections (include catalog cuts), pipe sizing, pump and fan sizing, duct sizing, recapitulations of the heating and cooling load calculations. Sound attenuation of high-pressure systems shall be included with the bound calculation submittal. Electrical data containing short circuitry, voltage drop and load, and lighting calculations shall be included. Submit a diagram of the systems with appropriate equipment schedule including the length and size of each electrical primary and secondary feeder. The feeder lengths should not be noted on the contract drawings.

C. GFE BILL OF MATERIALS
The completed Bill of Materials for all Government Furnished Equipment shall be submitted on Government supplied forms.

D. COORDINATED UTILITY CROSS SECTIONS
Sections at a minimum **2**"=1'-0" (1:25 metric) scale of corridors, mechanical rooms and other areas shall be submitted where there are potential coordination problems between trades. Each section will indicate concerned trades and illustrate the structural numbers for both new and existing members.

E. PROJECT SPECIFICATIONS
Specifications shall be 100 percent complete and printed single-spaced, single sided and bound.

F. COST ESTIMATE
The cost estimate shall be based on quantity takeoffs and unit material and labor prices. Costs shall be broken down by specification section. The acquisition method shall be considered when determining cost. Design contingencies are not to be used at this stage. Units of measure shall be metric unless directed by the Project Officer.

G. MATERIAL LISTS
Identify any long lead time items and/or items which, because of their uniqueness or critical tolerance in manufacture and/or installation, require particular scrutiny during construction. List any proprietary item(s), and Government furnished equipment. (NOTE: Proprietary items shall not be used without prior approval by the Government. Request for proprietary items should be submitted at 35%.)

H. CONSTRUCTION SCHEDULE
A completed construction bar chart schedule and narrative report shall be submitted. The narrative report shall include long lead items, and their anticipated delivery times. Schedule must consider availability of materials, site conditions, seasonal conditions, special NIH requirements, and length of construction for major systems. The narrative report shall also include any instructions relating to scheduling, phasing or similar information needed to achieve optimum construction efficiency and eliminate or minimize disruption to NIH personnel and operation.

I. REVIEW COMMENT FORMS
Submit the 70% Construction Document Phase Review Comment Forms indicating what actions have been taken to resolve the comments.

J. FINAL ARCHITECTURAL FINISH BOARD(s):
Two sets showing samples of proposed finishes.

K. DOCUMENTATION THAT PROVIDES PROOF THAT THE QUALITY ASSURANCE/QUALITY CONTROL PLAN:
As submitted and approved, has been accomplished.

L. STORMWATER MANAGEMENT PLAN
When required and indicated in the project scope, the final Stormwater Management and Erosion/Sediment Control submissions ready for forwarding to the State shall be submitted four (4) weeks before the 100% submission.

3.5.3 Procedures

A. The A/E shall deliver to the P.O. the documents indicated in the Statement of Work. The P.O. may request the A/E to distribute submission copies to other departments of NIH.

B. The Government, using the NIH comments form will review the submission. The A/E shall obtain the review comments from the P.O. and shall resolve and incorporate the comments into the next submission. The A/E shall respond to all comments with detailed responses on the comment form, indicating what action will be taken to resolve each comment. If a comment is not incorporated, the A/E shall provide a rationale for not incorporating the comment. These responses must be submitted within 2 weeks after the return of the government review.

C. If the submission is determined to be inadequate, it will be returned for resubmission.

3.6 Final Submission

A submission of the A/E's construction documents and a cost estimate which is complete and ready for advertising and bidding. All comments of the 100% submittal shall be incorporated into the construction documents.

3.6.1 Objective
To allow the Government to successfully bid and award a construction contract for the work described in the "Statement of Architect/Engineer Services.@

3.6.2 Contents
A. Original, reproducible project drawings signed by a legally responsible officer of the A/E with Section 4.5.
B. Copies of the project drawings, printed at either full size or half size as specified in the statement of work.
C. If the A/E has produced any design drawings using a computerized graphics design system, the A/E shall provide the Government with a copy of the entire computer graphics data base (e.g., drawing files; "figure", "cell" or "block" files; text files; etc.) in DXF file format on either 5 1/4 inch or 3 **2** inch floppy disks.
D. A bound original of the completed project specifications, signed by the prepares of the specifications.
E. Copies of the project specifications.
F. Final cost estimate.
G. Calculations, if any changes have been made since the 100% Submission.

3.6.3 Procedures
The A/E shall deliver to the Project Officer the documents indicated in the Statement of Work.

3.7 Bid Package Analysis
When requested, the A/E shall complete an analysis to determine the feasibility and economy of separate construction bid packages, equipment and building material purchases.

3.7.1 Objective
To allow the Government to choose the method of procurement which is most advantageous, in view of constraints in the schedule, as well as funding availability.

3.7.2 Contents
An analysis, prepared in narrative report form, including justifications, cost of each package, the award date and length of construction or delivery.

3.7.3 Procedures
The A/E shall deliver to the P.O. the documents indicated in the Statement of Work.

3.8 Environmental Permits Report
Executive Order 12088, "Federal Compliance With Pollution Control Standards", as amended,

requires Federal facilities to comply with applicable Federal, State, local and interstate pollution control standards. Accordingly, the A/E shall ensure that each project is evaluated for construction permit requirements in order to comply with all applicable regulations governing air quality, water quality, solid waste and hazardous waste. The information and data shall be provided by the A/E as early in the design as possible.

3.8.1 Contents

A. A report, prepared in brochure format, including the following:
(1) Type of permit or variance required (construction, operation, etc.),
(2) Permitting authority (State, local, etc.),
(3) Procedure and time necessary to complete the permit application,
(4) Required fees.
(5) A statement that the project is covered by variances or that a permit is not required. If a variance is required, describe procedures on how it can be obtained. If a permit is not required, furnish reasons and supporting justification (cite State or local regulations).
(6) For each permit required, the A/E shall evaluate all State and/or local regulations to determine if monitoring devices are needed. Where required, monitoring devices shall be included in the project design.
B. Necessary coordination shall be obtained and maintained with State and/or local permitting agencies as required. Discussions may include the scope and details of the project, provided there is no discussion of the fiscal year or dollar value amount involved.

3.8.2 Procedures

The report shall be in a brochure format, bound separately and delivered to the P.O. as indicated.

3.9 Fire Protection Water Flow Tests

The A/E shall perform a water flow test(s) on the existing water supply system(s) in order to determine the adequacy of the available water supply for the expected demands. Testing shall be performed in accordance with NFPA 13 Chapter 7, A-7-2. 1, "Water Supplies". The findings shall be submitted in a format similar to that of NFPA-13, Chapter 6, Fig A-6-2.2(d), "Hydraulic Graph". Sketches shall be provided to show location of test hydrants, water distribution system, building location, etc.

3.10 Interior Design Services

Design services required providing the Government with a furniture layout, surface treatment selections, furniture and furnishings selection, signs and ordering information for the project. The A/E shall provide these services as outlined in Appendix II.

3.11 Model

A physical scaled representation of the project, which provides the Government with a clear understanding of the project, its massing and its relationship to existing structures, form and scale. The model shall be of a suitable material and properly constructed to withstand several changes in

location. A clear plastic dust cover shall be provided.

3.12 Post Design Services

When required by the Task Statement of Work, the A/E shall assist the Government with the administration of the construction contract. The A/E contract may be modified to include some or all of the services discussed in Section 7:

3.13 Rendering

When required by the task Statement of Work, the A/E shall provide A professionally prepared color perspective rendering, a minimum of 30 inches wide in size. The height shall be appropriate for the composition. The rendering shall have a matting of 4 inches and the entire frame shall not exceed 30 inches by 40 inches. Two sketches of the project shall be submitted for review, and for approval of one. Should neither of the sketches be acceptable, additional sketches shall be required.

The A/E shall submit the original rendering and three full-size copies; each shall be matted, covered with plexiglass and mounted in simple aluminum frames, complete with hanging hardware. The frame shall be made of a heavy gauge, so as not to deflect and shall have a vertical reinforcing wire attached to the top and bottom frame members. Six 8-inch by 10-inch color photographs and four 35mm slides shall accompany the submission.
The mat of the rendering shall contain the following information across the bottom:

Prepared for		
Design and Construction Branch	Title of Project	A/E
Division of Engineering Services	Name	
National Institutes of Health		

3.14 Soil Borings and Soils Analysis

Geotechnical Engineering Services if required by the task SOW shall be employed by the A/E. Geotechnical Services are the technical investigation and engineering applications of soils or rock strengths, stability, settlement characteristics, and other related soil conditions.
It is the A/E's responsibility to ensure that the subsurface investigation is sufficient and proper to provide adequate soils information for the design and construction of the proposed facility. The A/E shall prepare a plan which meets this requirement and submit it to NIH for approval.
The A/E shall submit to the PO for approval a foundation analysis (based on the soils investigation) which includes the soils' test results, a cost analysis of at least three different foundation systems (i.e., pressure injected footing, H Piles, caissons, etc.), temporary and permanent dewatering systems, sheeting and shoring requirements necessary for the design and construction of this facility. Submit the original and five copies of the soils investigation documents to the PO.

3.14.1 Contents

The soil report shall be submitted in the following format:

A. Executive summary of conclusions and recommendations
B. Description of site and proposed construction
C. Subsurface conditions and laboratory testing
D. Geotechnical engineering analysis
E. Calculations
F. Soil boring logs
G. Test results with graphs
H. Location maps and site plan with soil boring locations sufficiently detailed to adequately locate borings on station utility plans.

3.14.2 Procedures

The A/E shall submit a recommended geotechnical exploration and analysis program with detail fee breakdown, along with the A/E fee proposal. The exploration program shall include furnishing the data necessary to prepare storm water management plans or waiver applications when required for the project. The A/E fee proposal shall also include project review by the geotechnical engineer providing the analysis and any recommendations for the project.

3.15 Land Survey

A survey showing all physical features, site conditions and utilities, above and below ground.

3.15.1 Objective

To provide the basis for depicting the existing site conditions on the project drawings.

3.15.2 Contents

A. BOUNDARY SURVEY

A boundary survey delineating existing site boundaries in addition to easements, setback limits, encroachments, alley crossings, proposed street widening, etc., shall be submitted.

B. TOPOGRAPHICAL SURVEY

A topographic survey will establish grades of streets bordering or crossing the site; mark high water elevations, if the site is subject to flooding; provide data on existing trees, plantings, and landscape including location, identification, diameter of trunk (one foot above ground), approximate spread of branches, foliage outlines for the edge of woods, ground elevation at the base of isolated trees, etc. Drawings shall be stamped and sealed by a professional land surveyor.

C. UTILITY SURVEY

A utility survey to include location and type of utility services crossing or bordering the site shall be completed.

D. SITE ANALYSIS

After the site surveys have been completed, a thorough analysis shall be developed as part of the design concept phase. This analysis is to include consideration of the following site conditions: topography, views and vistas, traffic patterns (pedestrian and vehicular), noise, permanent site features; plantings; climate; solar orientation; wind conditions, and environmental impact.

A. All surface and subsurface features, including roads, trees, rock outcrops, springs, walks, building, wetlands and abandon footings, etc.
B. All utilities, above and below ground
C. Existing contours
D. Spot elevations (on critical features only)
E. Datum and grid coordinate system used
F. Benchmarks and horizontal control points, with a minimum of two vertical and two horizontal control points established by the surveyor in accordance with supplemental guidance available from EFA CHES, Code 405. Points shall be located outside areas to be disturbed by the proposed construction.

3.15.3 Format

A. The scale of the plot of the survey plans shall be such that all information is legible and clear on the construction documents when printed at half size. Survey plot scale shall be 1" = 20', unless otherwise directed.
B. The contour interval shall be chosen consistent with the existing topography and the nature of the construction being performed.
C. The survey may be based on either a ground or aerial survey. If an aerial survey is chosen, the accuracy of that survey should be suitable for its intended purpose or, if necessary, supplemented with ground-acquired information.
D. The topographic survey and original survey notes and plots shall be delivered to the P.O. as indicated in the Statement of Work.

3.16 Erosion/Sediment Control and NPDES Permitting

The A/E shall prepare erosion/sediment control documents for review and approval by the appropriate jurisdiction, when necessitated by site disturbance in excess of that which would allow an exclusion. The A/E shall prepare the project design documents, incorporating all necessary design elements to comply with Federal and/or State National Pollution Discharge Elimination System (NPDES) general permit requirements for construction activity.

A draft erosion/sediment control submission, as complete as possible in format and substance, shall be included in the 35% submission. It shall include a site description, sketches showing existing and proposed drainage divides, preliminary runoff calculations and a preliminary erosion/sediment control plan, with sufficient detail to assess the designer's intent.

A final erosion/sediment control submission, incorporating 35% Submission comments and detailed design elements, shall be provided at the 70% or four (4) weeks before the 100% Submission.

In the final erosion/sediment control submission, the A/E shall provide contract documents, which are, complete, and present functional, cost-effective erosion/sediment control measures, satisfying all submission requirements necessary for review and approval by the appropriate jurisdiction.

The A/E shall deliver all submissions to NIH and not to the subject jurisdiction.
The A/E shall incorporate the appropriate erosion and sediment control measures and to require the prime contractor and applicable subcontractors to submit the appropriate notice of intent (NOI) and notice of termination (NOT) forms as required for coverage under the applicable Federal and/or State NPDES general permit.

3.17 Stormwater Management

The A/E shall prepare stormwater management documents for review and approval by the appropriate jurisdiction, when necessitated by site disturbance in excess of that which would allow an exclusion.

For projects requiring stormwater management, the A/E shall address the most stringent requirements of the state, County and local standards.

The draft stormwater management submission shall be included in the 35% Submission. It shall contain all pertinent computations, site-specific information, upstream and downstream data, and resulting conclusions as necessary for a thorough review by the appropriate reviewing agency.
A final stormwater management submission, incorporating 35% Submission comments and detailed design elements, shall be provided at the 70% or four (4) weeks before the 100% Submission.

In the final stormwater management submission, the A/E shall provide the permit/waiver application forms, the final stormwater management report and the Civil portion of the contract documents which are complete, and present a functional, cost-effective stormwater management design solution based on the stormwater management report, which will satisfy all submission requirements necessary for review and approval by the appropriate jurisdiction.

The A/E shall deliver all submissions to NIH and not to the subject jurisdiction.

3.18 Hazardous Material Removal

The A/E shall be required to investigate and identify the extent of all hazardous materials on the project and specify a Hazardous Material Abatement Plan. Hazardous materials include, but are not limited to asbestos, lead paint, PCBs, etc.

The A/E will be responsible for securing samples of any suspicious materials and for having the samples tested by a qualified testing laboratory. Samples may be required on suspect building materials, architectural finishes, equipment, piping, debris and dust. Sampling shall be done in accordance with EPA, state and local requirements, and performed by accredited personnel.
For structures constructed before 1980, the A/E shall assume all painted surfaces are coated with lead-based paint.

The A/E contractor shall submit to the P.O. a report containing the number of samples taken the location of the samples taken and the results of the testing for each sample.

SECTION 4: PROJECT DRAWINGS

4.1 Preparation of Project Drawings and Reports

Drawings shall be prepared on A/E furnished D-size Mylar sheets with pre-printed NIH Title Block. The drawings shall be complete, fully detailed and accurately dimensioned. All work shall be completely noted. Details, sections, elevations, and plans shall be identified and cross-referenced to indicate the plan drawing number and the section sheet number.

Drawings shall be arranged in the following order:

Discipline	Drawing # Designation
Cover Sheet	T
Civil	C
Demolition	D
Architectural	A
Structural	S
Mechanical	M
Plumbing	P
Electrical	E
Fire Protection	F

All studies, calculations, and analyses submitted in brochure form, shall be printed on 8 **2** inches by 11 inches paper and shall be bound in spiral or three-ring binders. Studies, calculations, and analyses may be bound in a single binder, if they are separated by section markers. Sheets shall be consecutively numbered.

4.1.1 Order of Project Drawings

A. Cover Sheet

Each cover sheet shall include a vicinity map showing the building site in relation to the NIH Campus and/or surrounding highways. A map indicating the project or site and/or building shall also be provided. All maps shall show scales, north arrows, and appropriate legends. An index of all drawings and abbreviations along with an explanation of the detail referencing system shall be included on the cover sheet. A legend and symbol list shall be provided on the first sheet of each discipline. All lettering shall be 1/8" minimum in height, if there are no separate specifications. General conditions concerning working hours, special building restrictions, property and personnel protection, coordination with other contractors and Government personnel, overtime requirements for utility outages, etc., shall be listed under the "General Notes" on the cover page.

The A/E must carefully edit the "General and Special Conditions" of the project specifications to

ensure that there is no conflict between the specifications and the General Notes.

B. Schedules

Schedules shall be provided on the drawings for room finishes, doors, windows, electrical equipment, mechanical equipment, plumbing fixtures and other items required to convey design requirements. The schedules shall describe each item of work, and symbols for these items shall be cross-referenced on the plans, elevations, and schedules.

4.2 Soil Boring Logs

Soil boring logs showing the soil conditions shall be indicated on the drawings, together with a reference to the source of information, i.e., title and date of the soils report and the name of the soil testing firm. The plan locations of the soil borings shall be shown on appropriate size scale drawings, preferably on the finish grading plans, so that relationships to existing and finish grades can be readily ascertained. When logs are not drawn on the same sheet as the large-scale location plans or when features of a large project, such as a sewage project, are widely separated and the number of logs exceeds five, a separate small-scale location plan shall accompany the logs. Logs shall be drawn to an appropriate engineering scale to show the depth of the boring below ground, with the corresponding elevation of the existing ground, related to project data, indicated at the top of the boring.

4.3 Quality Assurance

Project drawings shall be final and complete, with all elements thoroughly checked and coordinated with each other, the project specifications and the various engineering studies. It is essential that the project drawings be accurate and explicit and that they provide an equitable basis for bids. All elements of the work shall be properly coordinated to ensure that there are no conflicts between or among the various disciplines. Particular emphasis shall be placed on this coordination when certain elements of the design are subcontracted by the A/E. The project drawings shall be checked for conformance with all applicable criteria, adequate design, and accuracy of details and dimensions. Text shall be checked for spelling, punctuation and grammar. Sheets shall be crosschecked against each other for similarity of dimensions and details. The project specifications shall be reviewed immediately prior to the submittal of the project drawings and specifications to ensure that all changes on the project drawings have been reflected in the project specifications. The A/E shall ensure that conflicts do not exist between drawings and specifications.

4.4 Revisions to Project Drawings

A revision is a change on the project drawings after the project has been released for advertisement but prior to the completion of the A/E contract. Revisions to project drawings are usually done as part of an amendment or a construction change order. The revision block shall not be used without prior approval of the P.O. Revisions shall be made by crossing out, by adding new or revised information on the signed reproducibles, or by redrawing. Erasures shall not be made to the drawings.

A revision symbol-a letter and number within a triangle-shall be used to identify a revision on the

project drawing. In addition, revisions shall be logged in the revision block in the upper right-hand corner of the project drawing by placing a letter in the symbol portion of the block, followed by the item description, the date of the revision, and the initials of the approving Government official. A corresponding revision symbol shall be placed near the affected area on the project drawing. Revision "A" shall indicate the first revision to a drawing; Revision "B", the second, etc.
The letters I, O, and X shall not be used. A single revision change may include several different items. Each item shall be identified with the same revision letter and shall include a number to distinguish it from other items within the revision, e.g., Al, A2, etc. The appropriate number or group of numbers shall precede each item description in the description column of the revision block. The revised area on the project drawing shall be circled with a soft black pencil on the back of the project drawing to make the revised area conspicuous.

The revision symbol shall be located as near as possible to the notes, lines, views or dimensions that have been changed to keep the number of symbols to a minimum. To prevent overcrowding, where there are many changes in one area of a drawing, a single revision symbol may be used to identify the change if sufficient data are included in the revision block.
If the revision accompanies an amendment or change order request, the amendment or change order number shall be indicated in the revision block along with a description of the change. New project drawings accompanying an amendment or a change order request shall include the following statement in the revision block: "This drawing accompanies amendment number." or "This drawing accompanies Change Order number."

4.5 Signatures on Project Drawings

Each project drawing shall bear the surname of all individuals directly involved in its preparation. The designer and reviewer shall not be the same person. The engineer or architect signing the project drawings shall be a professional engineer (P.E.) or a registered architect (R.A.) in the State of record of the A/E or the State of the proposed construction project. In addition, a corporate member of the prime A/E in the title block marked “submitted by” shall sign each project drawing. Each project drawing must be stamped with the appropriate registration seal and original signature of the architect/engineer for that discipline, with the seal placed to the left of the title block. The title block on the cover sheet will include a space for the signature of: the project officer, fire prevention, the using institute, and a division of safety representative.

4.6 Preparation of Record Drawings

The Construction Contractor will make a record of changes made during construction on a copy of the project drawings. At the conclusion of the construction and when required by a change order to the A/E contract, the A/E shall correct the original project drawings to show the "as-built" changes indicated on the marked-up prints. Deletions or superseded portions of the project drawings shall be erased. However, optional methods of construction not used shall be crossed out and noted "NOT USED". These record drawings shall show only the actual construction. The notation "RECORD DRAWINGS" shall be stamped adjacent to the title block.

4.7 Lettering Size

The quality and size of lettering must be such as to ensure accurate bidding. Freehand lettering shall be a minimum of 5/32-inch (0.156 inch) and mechanical lettering shall be a minimum of

0.150 inch. If the project drawings are illegible prints or fail to meet this minimum lettering size requirement, the project drawings may be returned to the A/E for resubmission.

SECTION 5: PROJECT SPECIFICATIONS

5.1 General

The project specifications complement the project drawings, but shall not repeat the information shown on the project drawings. The project specifications establish the quality of materials and workmanship, the methods of installation, the equipment functions and the testing required for the project. The project specifications shall be complete and free from ambiguities, duplications and omissions. Prepare the project specifications using NIH Guide Specifications. Guide Specifications are only for A/E reference. The A/E is expected to properly edit Guide Specifications for individual projects. The A/E is responsible for the content of the final project specifications.

5.2 Acquiring Guide Specifications

It is important to obtain guide specifications as early as possible. Final specifications must be prepared using the guide specifications, which were current at the time of the 35% Submission review.

5.3 Project Unique Sections

Guide Specifications may not be available for every type of construction needed on a particular project. If no Government specification is adequate, the A/E shall write an original project specific specification section.

When portions of a project are not covered by a guide specification, it is necessary to create those sections using language and form similar to those employed in a guide specification. Do not add trade names or proprietary limitations to a guide specification, except with prior Government approval.

5.4 Outline Specification

An outline specification is prepared as a part of the 35% submission in order to provide NIH with a basis for determining that the project scope and all applicable criteria are being adhered to. The outline specifications shall indicate, for each project specification section, the guide specification on which the design is based. Include the date of the guide specifications to be used.

5.5 Project Specification Characteristics

The project specifications shall comply with the following characteristics:

A. Brevity: The project specifications shall be brief, yet complete.

B. Clarity: The project specifications shall be clear, unambiguous, and coherent. General statements shall not be used.

C. Completeness: The project specifications shall state all known relevant conditions. Each item shall be covered directly and explicitly.

D. Coordination with Project Drawings: The project drawings and specifications shall be fully coordinated. The majority of claims made against the Government result from ambiguities or inconsistencies between the project drawings and the specifications.

E. "Or Equal" Conditions: Specifying products by the use of commercial trade names is permitted only with a justification under the following conditions, consistent with Federal Acquisition Regulations Part 6.302-1:

1. No Government or Industry document standard or specification exists for the product.
2. The product is only a minor part of the construction.
3. The product cannot be otherwise adequately described because of its technically involved construction or composition.
4. A minimum of three manufacturers is specified.
    - **A.** "[Product or system] shall be [model, make, etc.], as manufactured by [name and address]; or [model, make, etc.], as manufactured by [name and address]; or [model, make, etc.] as manufactured by [name and address] or equal."
    - **B.** Following this, the essential features of the product or system shall be set forth in sufficient detail to establish the basis upon which the equality of nonlisted products will be determined.
    - **C.** Finishes: If a trade name is used to specify a particular finish, the following disclaimer shall be added: "Patterns and colors listed by the manufacturer's name are for identification only. The listing is not intended to limit selection of similar finish colors and patterns from other manufacturers." This statement should also be used on the project's Finish Schedule.
    - **D.** Proprietary or Restrictive Requirement: This shall not be used unless it is established conclusively that no substitute serves the purpose. When a proprietary product is proposed for use, it shall be fully justified in writing and presented to the P.O. no later than at the 35% Submission.

5.6 Final Submission

In general, the Construction Specification Institute's (CSI) standard 16-division, three-part format shall be used. Include Section 00501, "List of Drawings"; Submittal Register (include after Section 01300, "Submittals"), and a disk(s).

5.7 Format

A. Project Specifications Format: CSI 16-division format. Divisions break down into sections; each section is identified by a five-digit number and a title. The sections consist of numbered and titled paragraphs.

B. Division Numbers and Titles: See NIH Guide Specifications

C. Section Numbers and Titles: See NIH Guide Specifications. Section titles shall be applicable to the actual work covered.

D. Paragraph Number and Titles: See the latest issue of the particular guide specifications.

E. Format Consistency: Project specification sections not developed directly from a guide

specification (usually called "original" sections) shall follow the requirements for the format previously outlined. Numbers and titles for original sections shall be taken from the CSI's "Master format: Master List of Section Titles and Numbers" CSI Document MP-2-1.

5.8 Instructions to Bidders

5.8.1 Bid Items and Options

Bid items and options are used for the purpose of obtaining bids on separate parts of the work within the project, when it is judged that funds available for the total scope of work may be insufficient. Bid items are awarded at the time of contract award. Options may be awarded anytime during the performance of the project. A bid schedule shall not include bid items solely for the purpose of obtaining cost information.
When Unit Price(s) or Bid Item(s) are required, the A/E shall use "Bid Schedule" forms.

5.8.2 Usable Facility to be Provided

The base bid item, i.e., "Bid Item 1", shall be so composed that an award of the base bid item provides a functionally complete and usable facility.

5.8.3 Additive Bid Items

When it appears that funds available for a project may be insufficient for all the desired features of a project, the Contracting Officer may provide in the Invitation for a base bid item covering the major portion of the work and for one or more additive bid items. Each additional bid item progressively adds specified features of the work in a stated order of priority**.** Cost Estimates shall be prepared for each bid item.

5.8.4 Bid Items on Project Drawings

Never label Bid Item 1 on the project drawings. Never label any bid items on the project drawings without prior Government approval.

5.9 Contractor Quality Control (CQC)

5.9.1 General

CQC is applicable to all construction contracts regardless of the dollar amount. Simply stated, CQC means that Government participation in the approval, testing and inspection aspects of the construction contract will be minimal. The Contractor as a part of the construction effort performs most of these functions, with their cost included in the bid price. The Government, however, will exercise complete control of the process and monitor the various elements to ensure that CQC is being exercised.

5.9.2 Project Drawings

CQC requires the Contractor to approve, inspect and test the work; therefore, it is essential that the project drawings and specifications be absolutely clear on what is to be provided. Accordingly, the A/E shall provide details, schedules and other items on the project drawings, which are required to show the intent of the Government. Should there be any doubt as to intent, the A/E shall provide the information necessary.

5.9.3 Materials

The reference documents, standards and specifications for materials shall be as brief, clear and concise as possible to facilitate approval by the Contractor. Where possible, use widely recognized reference documents, standards and specifications. In addition, identify those materials reserved by the Government for approval.

5.9.4 Installation

The A/E shall pay particular attention to installation requirements. For the most part, using a manufacturer's recommended method of installation is acceptable; however, these methods should be investigated by the A/E to determine if they are accurate and compatible with the remainder of the project specifications.

5.9.5 Tests

Unless the A/E specifically states in the project specifications that the Government will make certain tests, the Contractor shall perform all testing or by qualified agents employed by the Contractor. To enable the Contractor to estimate the testing, as well as all other phases of CQC, all tests to be performed must be stated clearly in the project specifications. The text shall state what is to be tested; the reference document, standard or specification under which it is to be tested; which test shall be used; the number of units to be tested; how many tests shall be made; and the frequency at which they shall be tested. In addition, acceptable limits of test results shall be stated. Manufacturer's certified tests, when made in accordance with recognized procedures such as those of the American Society for Testing and Materials are acceptable and should be used in lieu of testing an actual unit, wherever possible.

5.9.6 "Inspect" or "Check"

When the words "inspect" or "check" or derivatives of these words or words of similar meaning are used in the project specifications, they shall mean that the performance is to be accomplished by the Contractor's QC representative or a qualified agent of the Contractor. The Government will not inspect any portion of the work unless the project specifications states specifically that the Government will make the inspection. Under the concept of CQC, inspection by the Government is to be kept to a minimum. If the A/E feels that the Government should inspect a part of the work, the requirement shall be so stated in the project specifications.

SECTION 6: COST ESTIMATES

6.1 General

A detailed cost estimate is required with each submittal. CSI (Construction Specification Institute) Division shall prepare all estimates, whether manually or computer prepared. The estimate format defines the arrangement for presenting a summarization of contract direct costs, indirect costs, profit, bond and other contract requirements.
If the A/E's final bid price estimate is not within 10% of the low responsive bid at bid opening, the A/E is required to perform a bid analysis. The bid analysis shall:

- **A.** Identify those areas of the estimate in which discrepancies exist between the A/E's final bid price estimate and the low bid.
- **B.** Quantify the differences.
- **C.** Provide an explanation for the differences.
- **D.** Make a recommendation on what adjustments should be made to the final bid price estimate, if any.

The bid analysis shall include recommendations regarding award of the project to the low bidder. A sample format for the bid analysis and guidance instructions will be made available, as required. The bid analysis is required within one week and shall be provided at no additional cost to the Government.

Final Government estimates are to be marked "For Official Use Only" by the A/E. Access to or disclosure of information within the estimate is limited to those personnel whose official duties require knowledge of the estimate.

6.2 Project Design Estimates

The estimate for each submittal is expected to reflect the A/E's best information and experience. The anticipated bid opening date will be provided by the P.O. The estimator should verify that all specification requirements are priced with particular attention to Division One and the wage rates. Preference shall be given to including separate line items for costs associated with Division One. Size, material quality and type of item shall be part of the description in order to enable unit cost verification without constant reference to drawings and specifications. The A/E shall notify the P.O. whenever the estimate indicates that the design exceeds the allocated funds, and make recommendations as to how to bring the project back within budget.

6.2.1 35% and/or 60% Submissions

The estimate for these preliminary submittals shall reflect cost based on reasonably accurate take-off of materials/systems consistent with the level of design. For those elements of the project where the status of design does not permit a reasonably accurate take-off of quantities or firm pricing of individual items of work, systems unit prices may be used. Lump sum costs are not acceptable. Use of empirical costs shall be minimized.
Cost estimating requirements for a budget submission are covered under Section 3.2 "Concept Submissions".

6.2.2 100% Design Submissions

The 100% estimate shall be prepared from completed drawings and specifications with a narrative description of each system provided in the estimate. Whenever the A/E's estimate exceeds the authorized "Design to Cost", the A/E shall recommend items for cost reduction or propose bid items with the 100% Submission.

The material, labor and equipment costs shall be extended and subtotaled separately. Material taxes, labor burdens (FICA, State and Federal unemployment tax, and worker's compensation insurance), overhead, profit and escalation shall be shown as a percentage of the appropriate costs. Escalation shall be calculated and shown in the estimate. If construction phasing is required in the project, the A/E shall indicate how the total cost is distributed between each of the phases.

Quotations must be obtained for all items of substantial quantity or cost. Price sources shall be done in the form of written quotations or may be taken by telephone and included with the estimate. In either case, the A/E shall provide the company name, person contacted and date of quote. Costs in an estimate are considered to be reasonable price that a contractor would be expected to pay. Separate estimates shall be prepared for each bid item identified in the specifications. Estimates, which do not conform to these format and information requirements, will be returned for revision.

SECTION 7: POST DESIGN SERVICES/CONSTRUCTION MANAGEMENT

7.1 General

The post design phase includes all requirements of the project from acceptance of the final design submission to final acceptance of the completed project. When required by the task Statement of Work. The A/E shall provide the services specified herein. When a construction quality assurance plan exists for the project, A/E services shall conform to the QA Plan.

7.2 Construction Procurement Services

The A/E shall attend the pre-bid meeting and shall provide responses to contractor questions/issues regarding the project. The A/E shall assist in negotiations, including the analysis of the contractors' proposals and developing a Government prenegotiation position. The A/E shall develop supporting documentation for amendments as required. When requested, the A/E shall submit information and/or recommendations regarding award.

7.3 Quality Assurance Plan

When requested, the A/E shall develop a written Quality Assurance Plan. The plan will be used

by the Government to monitor project construction. Appendix III provides a scope of work to be used when developing the Quality Assurance Plan. The Quality Assurance Plan may be required as a submission during the project design.

7.4 Contractor Submittal Review

7.4.1 Submittal Approval

The A/E shall review and ultimately approve all contractor submittals required under the construction contract.

The A/E shall work with the PO, and selected contractor to resolve any problems delaying approval of contractor submittals.

For purposes of this contract, a review period of 14 calendar days is the maximum required submittal review period unless specified differently in the task Statement of Work. The A/E shall notify the PO in writing of any submittal anticipated to exceed this period. The A/E may be liable for damages resulting from construction delays caused by late submittal reviews.

7.4.2 Monitoring Submittals

The A/E shall monitor and track all key submittals to ensure the progress of the work is not impeded. If submittals are not being received on time, the A/E shall ascertain the reason, and recommend to the PO action as may be appropriate to eliminate lags and delays in obtaining submittal approval. In addition the A/E shall notify the PO promptly of any other processing delays, the reasons for the delays and proposed solutions. The A/E shall follow through with the solutions if so directed by the P.O.

7.5 Construction Inspection/Monitoring

7.5.1 Progress Monitoring

The A/E shall provide construction-monitoring services for demolition, and excavation, and for items that will be concealed during the construction progress such as reinforcing steel prior to the placing of concrete, steel, and other items.

Qualified personnel shall perform the monitoring of construction, or employees of the A/E firm acceptable to the CO, through construction completion and shall include but not necessarily be limited to the following:

Inspection of construction for full compliance with plans, specifications, and other contract documents.

Before construction is started the location of the building and important dimensions and grades shall be verified.

As soon as the excavation is completed, examine the soil where footings are to be placed to assure that the allowable bearing pressures are adequate for the design load.

When concrete forms are completed, examine them for dimension, alignment, rigidity, placement of steel, electrical conduit, and mechanical ducts.

Assure that materials and equipment being built into the construction conform to the specifications and that any required certifications are properly made. Maintain a record of types and brands of the construction materials and equipment used and that they conform to Federal and/or other specification requirements,

Maintain record of significant events during the construction period, specifically noting all construction inspections, personnel of each trade working, discrepancies, and construction delays, if any, and weather conditions.

The A/E shall ensure that the contractor maintains a current, clean marked set of the working drawings, prints, and specifications showing all construction changes. Upon construction completion, the A/E shall, if required, transpose all changes onto the original set of contract drawings and specifications. This Record Document will be turned over to the Government at the acceptance of each project.

The A/E shall obtain from the contractor and submit to the Government certified records in duplicate of all floor, elevation, and bottom of footings, grades approaches made as the work progresses.

Within three (3) days of each inspection trip, the A/E shall submit a construction progress report identifying the following:

Project title, location, work request number, date of visit, report number.
Items of work inspected, discrepancies identified (reference drawing and specification section and/or code, which apply to the discrepancy).

Equipment on site and personnel on site by trade.
Weather conditions.

Significant events during the construction.
Any discussions held about the project and personnel involved.
Any delays or significant issues effecting the construction.

7.5.2 Milestone Inspection

A multi-discipline team shall conduct milestone inspections. The desired and intended result of this effort is to provide assurance of the contractor's conformance with plans and specifications. Following these milestone inspections, the A/E shall prepare a detailed list of items not conforming to contract requirements together with recommended action for their correction. Unless otherwise identified, a minimum of three milestone inspections shall be conducted. The

specific milestone inspections shall be at the direction of the PO.

7.5.3 Final Inspection

The Government, assisted by the A/E shall perform a final inspection of each construction contract, and shall develop the list of deficiencies and omissions (D&O's) based on the inspection. The A/E shall provide the PO with an estimate on the shortest time possible for the contractor to complete and resolve each D&O. The A/E shall confirm that the separate contractors have corrected items listed as D&O's during the final inspection, and shall sign off on each item as it is corrected.

When a construction quality assurance plan exists for the project, inspection and monitoring services shall be in accordance with the QA plan.

7.6 Review Of Construction Schedule And Monthly Payment Requests

The A/E shall review the contractor's critical path method (CPM) schedule or bar chart for compliance with the requirements of the construction contract. The A/E shall review each CPM to ascertain whether the schedule includes all activities necessary to make the schedule an effective tool for planning, scheduling, coordinating, and making of progress payments. The CPM should identify the major milestones of the construction and comply with the scheduling requirements of the construction contract. The A/E shall note whether the duration's and associated costs are fair and reasonable. When satisfied, the A/E shall forward to the PO a recommendation of approval or if not satisfied, the A/E shall identify the deficiencies and recommend solutions for correction.

The A/E shall monitor deliveries with such frequency as to allow alternative materials/equipment to be procured if the schedule is impacted by tardy deliveries.
The A/E shall develop, maintain, and make available to the PO, complete and accurate records of all actual progress versus scheduled progress for the purpose of documenting and establishing project history.

The A/E shall review and process all applications by construction contractors for progress payments and final payment. The A/E shall provide recommendations concerning approval to the project officer in accordance with the contractor's schedule of values and considering the work completed as of the invoice date. The A/E shall identify materials delivered to the job site, but not installed for which the contractor has invoiced. The A/E shall also evaluate whether the contractor is on schedule or behind schedule and state this in his payment recommendation.

7.7 Project Administration

The A/E shall perform all the following tasks for the complete project administration and inspection:

7.7.1 Field Administration

The A/E shall handle all field administration, correspondence, change orders, modifications, and

supplements pertaining to the project in an orderly and accessible field office.

7.7.2 Maintenance of Records

The A/E shall maintain at the job site office, a current record of all contracts; correspondences by the A/E, the PO, the CO or any other authorized representatives; copies of all change orders and documents related thereto; and all original records relating to shop drawings, samples, contractor purchases, material and equipment. These records shall be delivered to the PO at the completion of each individual contract and prior to the final payment of each contract.

7.7.3 Design Interpretations

All design interpretations and final approvals for all material substitutions remain a responsibility of the Government based on the A/E's on-site interpretations with regard to methods, sequences and scheduling.

7.7.4 Rejections

The A/E shall promptly reject and/or identify orally, and in writing to the responsible contractor and the PO, all construction work that does not comply with the requirements of the contract. The A/E shall maintain a list of observed variances with the contract requirements and make every effort to resolve it within the terms and conditions of the contract and identify a corrective measure to the PO and the CO for formal modifications.

7.7.5 Construction Contract Changes

The A/E shall furnish assistance to the CO, through the PO, in the documentation and technical administration of any necessary changes to the construction contracts, including but not limited to the following services:

Upon receipt of any proposed changes the A/E shall review and forward to the CO through the PO his recommendations for rejection, full acceptance, or partial acceptance. The A/E shall support his recommendations in writing.

The A/E shall assist the CO through the PO in requesting from the contractor a proposal with supporting documentation for the contemplated change. Requests for proposals shall include a Scope of Work and prepared detailed and independent cost estimate. The A/E shall review applicable plans and specifications, estimate the additional performance time that may be required, and participate as a technical advisor to the PO and CO during negotiation.

For any change orders that have been approved but not negotiated, the A/E shall carefully observe performance by the contractor, make and maintain detailed written records of equipment, material, and labor utilized and of the impact on unchanged work. The A/E shall evaluate records of any other data or information pertinent to a determination of the amount of equitable adjustment to which the contractor is entitled. The A/E shall not direct the contractor or take any action with contractor, which could result in any change to the terms and conditions of the construction contract.

7.7.6 Obtaining Permits
The A/E shall assure that the contractor obtain all necessary permits, approvals, and inspections necessary for the completion of the work and ensure all such requirements are satisfactorily completed.

7.7.7 Site Management
The A/E shall, working with the PO, notify the contractors as to when site deliveries, construction activities, utility interruptions, access to existing facilities, clean roadways, and other activities can occur as appropriate to cause minimum obstructions to current NIH operations.

The A/E shall, through inspection, ascertain that the contractor is adhering to accepted construction methods with regard to safety, security, and soil erosion. The A/E shall require the site to be clear of unnecessary debris at all times.

7.7.8 Daily Progress Reports
The A/E shall prepare and maintain accurate and detailed written records during all stages of construction. The A/E shall maintain a detailed record of all events, which occur at the job site, or elsewhere, which effect or may be expected to effect progress of the project. The record shall also contain a daily record of the contractor's workforce. The record shall be available to the PO and shall be turned over to the PO upon completion and acceptance of each construction project.

7.7.9 Weekly Reports
Weekly reports shall be prepared by the A/E and furnished to the PO, giving a status overview highlighting notable problems, deficiencies, projections, etc., that may have impact on the overall schedule.

7.7.10 Monthly Report
The A/E shall provide a monthly report to the CO and the PO in the form of an action plan, addressing the milestones of the schedule and budget. This monthly report will make a clear comparison between the original budget and schedule by each contractor to the actual date of accomplishment. A brief narrative shall address revisions, schedule slippage and recommended actions to regain and maintain the schedule and budget.

7.7.11 Meetings and Conferences
The A/E shall participate in all meetings and conferences. The A/E shall record, and distributing complete minutes to all individuals in attendance within three days after the meetings.

7.8 Photographs
The A/E shall, through photographs, record construction progress and events. Photographs shall

be catalogued, identified and kept in permanent record form. The PO will determine what needs to be photographed and submittal dates.

7.9 Safety Program

The A/E shall review the safety program developed by each of the separate contractors for conformance with OSHA requirements.

7.10 Job Site Facilities

The A/E shall, if required by the task SOW, maintain an on-site office for the duration of the construction contract. The A/E shall be provided with telephone and utility services by NIH at no expense to the A/E. Hook-ups are at the A/E's expense.

7.11 Project Closeout

Prior to project acceptance by the Government, the A/E shall gather all operation and maintenance manuals and warranties required of the contractors. The A/E shall ensure that the manuals are properly bound, indexed and in the number required, and deliver all manuals and warranties to the PO.

The A/E shall coordinate and schedule with the required contractors, The equipment and system demonstrations to instruct Government staff in the operation, care, and maintenance of the installed systems.

The A/E shall coordinate and expedite startup, testing, and balancing of mechanical, electrical and monitoring equipment.

A detailed check off list of D&O's shall be maintained by the A/E.
The A/E shall make written reports and recommendations to the PO in regard to completion of the D&O list.

7.12 On Call Service:

During construction, the A/E shall provide qualified personnel as may be needed on an "on call" basis as directed by the CO.

Payment for these services will be paid based on the established hourly rate and only for those activities not related to design deficiencies which is part of the A/E's responsibilities.

The A/E, as a minimum, shall provide qualified personnel for each of the following disciplines: Architect, Mechanical Engineer, Electrical Engineer, Structural Engineer, Civil Engineer, Fire Protection Specialist, Hazardous Waste Abatement Consultant, Construction Scheduling Consultant, Estimator.

7.13 Post Occupancy Surveys

When required by the Task Statement of Work, the contractor shall participate in post occupancy surveys

APPENDIX I

BASIS OF DESIGN REPORT

The following is an example of the format and content for the Basis of Design Report. Ensure that this report is coordinated with the 35% Submission outline specifications.

I. Architectural

A. Design Area Tabulation:

The A/E shall provide in the Basis of Design a complete area breakdown tabulation for gross and net areas to conform to scope and statutory criteria compliance. A supplemental drawing, indicating method of area takeoff, shall accompany the are tabulation. Subsequent revised area tabulation submittal at the 100 percent and final stages of project development will be required.

B. Materials:

Provide a description of materials for all major items of construction and all interior and exterior finishes. The description of the finishes may be accomplished by the use of preliminary finish schedule. Finishes should be appropriate for the design function.

II. Structural

A. Floor System:

Provide a discussion of the alternative floor systems considered for the floors. The discussion should include an evaluation of the advantages, disadvantages and economics of each alternative.

B. Roof System:

Provide a discussion of the alternative structural systems proposed for the roof. The discussion should include an evaluation of the advantages, disadvantages and economics of each alternative.

C. Foundation System:

Provide a discussion of the alternative pile or foundation systems considered for the facility foundation(s). The discussion should include an evaluation of the advantages and disadvantages as well as the economics of each alternative. Provide a description of the pile or foundation system(s) proposed including dimensions of the major elements and bay spacing.

D. Structural Frame:

Provide a discussion of the alternative structural systems considered for transferring the

horizontal and vertical loads to the foundation. The discussion should include an evaluation of the advantages/disadvantages as well as the economics of each alternative. Provide a description of structural system proposed for transferring the horizontal and vertical loads to the foundation.

III. Mechanical

A. Air Conditioning:

Indicate the inside design temperature and relative humidities, the outside wet and dry bulb design temperatures, and the AU@ factors for the type of construction proposed. Specify areas to be air-conditioned.

Provide a description of the air conditioning system proposed, e.g., factory assembled or built-up system; number of zones; a description of zones; the unit type, either chilled water system or direct expansion, and the type of refrigerant, etc. Provide a description of the operation of the system including energy conserving features, and a description of the controls.

Briefly describe the merits of the proposed system in terms of first costs, operating costs, efficiency, maintainability and practicality for the project=s requirements to be satisfied.

Describe the equipment to be used, e.g., a reciprocating or centrifugal chiller, condensers, air handling equipment, duct system, piping, etc.

B. Heating:

Include a statement of indoor and outdoor design temperatures and AU@ factors for walls, ceilings, floor, etc., to be used in the design.

Describe the heating system, the equipment used, the heating medium, the type of system, the energy conserving features, the operation and type of control system. Indicate the location of the heating plant. Provide a brief explanation of the basis for the selection of the type of fuel, including an economic comparison with other fuels, if required by government.

C. Ventilation:

Describe how ventilation is to be provided and how the quantities were arrived at. Describe the smoke removal systems employed. Describe the operation of the system in summer and winter use.

D. Building and Load Characteristics:

Provide a summary of the building and load characteristics for the project. This shall include the cooling load characteristic (gross square foot per ton); the heating load characteristic (BTU per square foot); the design energy target; and other load factors used in the calculations to account for loads due to people, ventilation, equipment, lighting, power, etc.

E. Plumbing:

Provide a description of the water supply system, hot water supply system, the sanitary drain and venting system and the storm water drainage system. Provide design factors that will be used in calculations. Select the type of materials proposed for the water pipe, stacks, etc. Provide size of domestic water service pipe, sanitary pipe and storm sewers.

Provide available water pressure data. Indicate use of sump pumps and ejectors. Indicate the need for special systems such as gas, compressed air vacuum, distilled water, medical gases or other special systems.

F. Refrigeration: (Cold Storage)

Provide a statement of areas to be refrigerated indicating their usage and temperatures to be maintained. Indicate the outside design dry and wet bulb temperatures, the type of refrigeration equipment, and the type and thickness of the refrigeration insulation.

G. Fuel Distribution and Storage:

For gas distribution, provide a statement of the type, the location of the takeoff from the supply and the available pressure, and describe the type and the materials for the pipe and valves.

Provide a statement of the unloading facilities, e.g., dock, tank car, or truck. Describe the type of system and the proposed features for liquid petroleum systems. Indicate the basis for the storage capacity, the rate of pumping, and the number of dispensing outlets. Describe the power supply and power requirements. Select the type and the materials for the pipe, tank, and valves. Describe the LPG system and materials, where applicable. Describe the method of spill prevention, containment leakage abatement, and leak detection alarm, meeting current criteria.

H. Combination Systems:

For systems in which the heating, ventilating, and/or air conditioning are combined, repetition may by eliminated by consolidating the previous requested information.

I. Energy Conservation:

Discuss energy-conserving features considered in the initial design development. Provide a brief description of the systems selected.

J. Miscellaneous Mechanical Systems:

Provide a description of any special mechanical systems, e.g., compressed air, hydraulic, nitrogen, etc., and explain the source of the medium.

K. Heating Plants and Heating Plant Additions:

1. Provide a statement of the type of fuel to be used and an economic comparison of the selected fuel with other available fuels.
2. Include a brief description of new boilers including size, pressure and type.
3. Include a description of any new auxiliaries to be added and what source of power to be used for their operation.
4. Prepare a description of the safety and combustion control systems utilized and how they will perform.

IV. Electrical

A. Interior Distribution Systems

1. Provide a description of the electrical characteristics for the proposed system(s),, i.e., phase, voltage and gauge of wire, of circuits.
2. Provide a breakdown of the estimated connected load to show:

a. Lighting and convenience outlet load
b. Power load for building equipment, e.g., heating, air conditioning, etc.
c. Loads of special operating equipment, e.g., compressors, generators and pumps, and power receptacles being provided to energize special equipment. Apply an appropriate demand factor to each computed connected load to project total demand load.

3. Indicate type of wiring system, e.g., rigid conduit, electrical nonmetallic tubing, nonmetallic sheathed cable, etc., and the location of its proposed use.
4. Indicate type of conductor, e.g., rubber insulated, thermoplastic insulated,, polyvinyl chloride jacket, etc., and the location of its proposed use.
5. Include a statement describing the proposed pertinent standards of design, e.g., voltage drop, lighting intensities, and the type of lighting fixtures.
6. Provide calculations to show a determination of short-circuit duty requirements for all protective devices and switchgear.
7. Indicate motor control and type, e.g., across-the-line, reduced voltage etc., and the rationale for selecting them.
8. Describe the type and arrangement of the telephones, signal intercom, fire alarm systems, and security systems.
9. Provide a statement relative to the exterior of the outside distribution system to accept the new loadings imposed at the point of takeoff. If the source is inadequate, state the measures necessary to correct the deficiency.
10. Indicate and describe any special power system requirements, e.g. emergency generators, 400 HZ systems, lighting protection, grounding, etc.

B. Exterior Distribution Systems

1. Provide a statement relative to the adequacy of the primary supply at the point of connection. If the primary source is inadequate, state the measures proposed to correct the deficiency.
2. Indicate the electrical characteristics of the power supply to the activity of the portion involved, including circuit-interrupting requirements and voltage regulation.
3. Provide an estimate of the total connected load and the resulting kilowatt demand load by applying proper demand and diversity factors, if a group of loads is involved.
4. Indicate the basis for the selection of primary and/or secondary distribution voltage.
5. Indicate the type of conductor, e.g., copper or aluminum, and the location of its proposed use.
6. Provide a statement describing the pertinent standards of design, e.g., voltage drop, physical characteristics of overhead or underground circuits, and the type of lighting units and lighting intensities.
7. Describe the type and adequacy of the telephones and signal and fire alarm systems, including a statement as to the number of spare telephone conductors available and the spare capacity on the fire alarm circuit.

V. Civil

A. Water Supply

1. Provide an explanation of the existing system, including the type, capacity, condition, present water use, and unsatisfactory elements of component part (for major extensions).

2. Include a statement of the type of construction proposed materials for water mains, type of well, etc.
3. Provide a statement of the design for distribution systems indicating the domestic and fire flow, the residual pressure, and the elevation differentials (This should include the designer-s basic estimate of the tentative pipe sizes).
4. Provide a statement of the tentative sizes, elevation, capacities, etc., as can be readily determined without long computations or design consideration for reservoirs, treatment units, pumping plants, well pumps, etc.

B. Sewers and Sewage Disposal Systems

1. Provide an explanation of the existing system, including the type, capacity, condition, present flow, and the unsatisfactory elements of the component parts for major extensions.
2. Include an interpretation of the degree of treatment necessary by effluent requirements and the units necessary for treatment.
3. Provide a statement of the design factors with present and projected design population loads for sewage treatment plants.
4. Indicate the materials to be used for sewer systems and sewage treatment plants.

C. Roads, Driveways, Parking Areas and Walls

1. Provide a statement of the general soil conditions, with a brief outline of soil exploration and testing performed.
2. Describe the type and volume of traffic, controlling wheel loads, and types of classes of roads under consideration, with justification for any deviation from criteria thickness for those classes.

D. Dust and Erosion Control

1. Dust and erosion control, where deemed necessary, will be considered an integral part of all design and construction projects. Such controls will be generally limited to areas actually scarred or denuded in the process of constructing a project. Dust and erosion control shall not be confused with landscaping.
2. The first submittal shall contain the necessary design data, outline specification, and the cost for dust and erosion control measures, where applicable. The Basis of Design shall include a statement regarding the type og treatment selected, the affected areas, and the reasons for the selection of the type and determination of the areas.

E. Fencing

Provide a type, height and justification for fencing.

F. Cathodic Protection

1. Provide results of soil resistivity measurements, when a buried steam line, P.O.L., or other is required.
2. Include variations in soil makeup.
3. Indicate the soil moisture content and normal seasonal variations.
4. Include the results of structure-to-soil potential measurements, where protection is to be provided for existing underground structures or where buried test specimens are used for a new installation.

5. Include the results of the temporary cathodic protection tests, if any.
6. Indicate the type of cathodic protection applied and the reasons for its selection.

G. Environmental Pollution Control

Provide a statement explaining expected environmental pollution and the proposed method of control. A detailed description shall be necessary for those facilities directly related to controlling air and water pollution, e.g., sewage treatment plants, industrial treatment facilities, incinerators, smoke elimination facilities, buried tanks and piping, etc.

H. Site Development

Describe the site of the project and its natural advantages and disadvantages relative to the proposed project. Additional statements shall be made outlining the proposed landscaping and other site work necessary to complete the site development.

VI. Fire Protection

A. Provide the following information:

1. The occupancy classification; type of construction; required building separation or exposure protection; rating of structural components; classification of interior finish; location of fire-rated walls and partitions.
2. Exit information including the number, type, exit travel distance, total exit width, total occupant load, etc.
3. Description and location of all fire extinguishing and/or detection systems and fire alarm system to be provided.
4. Location of required fire hydrants.
5. Identification of all hazardous areas and the indication of how these hazards will be protected.

Provide all of the data obtained from the water flow tests and determine the adequacy of the water supply (even for facilities without sprinkler protection).

B. For facilities that will be provided with automatic sprinkler systems, provide the following information:

1. Description of sprinkler system(s).
2. The area(s) that will be protected and the classification of the area(s).
3. The type of system protecting all areas of the facility.
4. The design density and demand area to be specified.
5. Hydraulic calculations showing that the water supply is adequate for the suppression systems and hose stream demand. For hydraulic calculations, deduct the hose stream requirement at the point of connection to the existing distribution system or the closest fire hydrant, whichever is closer to the sprinkler riser. If these demands cannot be met, the A/E shall provide the proper solutions the problem of an insufficient water supply (i.e., fire pump(s), and/or water storage tank(s)). Provide nominal head-to-head sprinkler calculations of the expected demand area to reflect the system demand.

C. Provide sketches where appropriate.

E. For existing buildings, provide information on all existing fire detection and suppression systems, i.e., type of systems, make and model of all equipment, spare zones, capacity of

control panels, standby battery capacity, etc.

APPENDIX II

INTERIOR DESIGN

When the Statement of Architect/Engineer Services requires interior design services, the following shall be provided:

1. Objective:

The A/E shall employ the services of a professional interior designer. The Interior Design shall be the result of a coordinated effort between all design disciplines and shall provide the necessary information for a complete and integrated interior design package.

2. Contents:

These services shall include:

A. The selection and coordination of all interior building finishes
B. The selection and specification of furniture and furnishings
C. Space planning
D. The selection and coordination of signage.

1. In addition, the package shall include, in brochure form, all information and documents necessary for procurement and implementation of the design by the Government. This information and documentation shall include, but is not limited to, purchase descriptions, keyed floor plans, specifications, a written justification for waivers, color photos, and cost estimates.
2. The A/E and the interior designer shall meet with The NIH Project Officer to become familiar with design requirements, as well as the mandatory sources through which Government procurement are made. Mandatory sources include existing warehouse stock, Federal Prisons Industries, Blind-Made Products, GSA stock catalogs and GSA Federal Supply Schedules. Selections from other than those previously listed must have written justification and necessary waiver request prepared by the A/E.

3. Format:

The A/E shall accomplish the work in four phases, as outlined herein:

A. Phase A - Interior Design Concept Submission

(1) To ensure that there is a clear understanding of the facility function and user needs, a conceptual interior design scheme shall be submitted with the architectural conceptual design submission.

(2) The interior design submission shall include block plans of code adjacencies and selection of furniture type, i.e., systems, modular, and/or conventional.

B. Phase B - Design Development Submission

(1) To ensure coordination of architectural and interior design disciplines, a preliminary interior design scheme shall be forwarded concurrently with the architectural design submission.

(2) This preliminary interior design submission shall include building finishes, built-in furnishings, typical furniture layouts, lighting, and any other elements of interior design, which interface with the architecture. One copy of the building finishes display board(s), of a manageable size (suggested 14 inches by 18 inches; not

longer that 20 inches by 30 inches), shall be submitted showing actual samples and colors of materials selected for exterior and interior building finishes.

C. Phase C - Contract Documents Submission

(1) The third submission shall be presented concurrently with the 100 percent architectural design submittal and shall consist of those items, which are part of the construction plans and specifications.

(2) Two copies of the building finishes display board shall be submitted.

(3) Floor plans (full size) shall be submitted, but not as part of the construction bid package. Floor plans shall consists of one of each floor showing complete furniture layout plus one of each floor showing electrical, lighting and telephone layouts. In addition, one copy of the furnishings display board(s) shall be submitted. The furnishings display board(s) shall be a manageable size (suggested 14 inches by 18 inches; not larger than 20 inches by 30 inches) and shall contain samples of fabrics, interior finishes, and furniture finishes and catalog cutouts of furniture, art work, accessories, and signage. The Government will return boards to the A/E after review. If systems furniture has been recommended, documentation illustrating a space savings of 20 to 30 percent shall be incorporated.

(4) The Project Officer will arrange a meeting with the ICD, which the A/E, along with the interior designer, shall make a formal presentation of the interior design package. In the event that this submission is found to be unacceptable, additional submissions and presentations shall be required until an acceptable solution is attained.

D. Phase D - Final Submission

(1) The A/E shall submit the final interior design package concurrently with the architectural final submission.

(2) The submission shall consist of three copies of the interior design brochure.

(a) Brochures shall be submitted in hardbound, multi-ring binders in an 8 1/2-inch-by-11-inch format. Brochures shall contain a title sheer, index, floor plans keyed to individual items, cost estimates, and cost summary sheets. Color photographs of building finishes and furnishings display boards shall be included in the brochures.

(b) In addition, the brochures shall include purchase descriptions plus any necessary interior design-related specifications and shall be in accordance with format samples furnished by the Government. The brochures shall include all information necessary for Government procurement and installation. The purchase descriptions shall indicate the source, GSA contract information, an item description, quantity and cost, and the source contract. Individual items shall be keyed to floor plans to indicate location.

APPENDIX III

QUALITY ASSURANCE PLAN SCOPE OF WORK

1. Meet with Project Officer and Contracting Officer to determine specific operational and inspection concerns. Information obtained will be used to develop the Quality Assurance Plan.
2. Provide a list of Acritical events@ which require more careful surveillance during construction and dates of observation.
3. Provide a list of suggested A-E and Government site visits and scope of the visits.
4. Recommend special agenda for pre-construction conference.
5. Include a provision for the Project Officer to initial key events as being witnessed and accepted.
6. Provide a list of all required shop drawings/material samples in order to maintain a current log of submittal and approvals.
7. Identify special tests (if any) and outline the necessary procedures to perform the test.
8. Identify all on-site tests.
9. Identify any inspection/tests required off-site at manufacturer or factory and indicate degree of Government surveillance required during fabrication.
10. Supply hardcopy of the report and WordPerfect (5.1 or 6.0) disk format so that Project Officer can use a historical record.
11. Provide a list of all required utility outages and areas affected by the outages.
12. Provide a list of all existing equipment to be relocated/reused (if any).
13. Provide a list of all Government furnished equipment.
14. Provide a list of all Government furnished services (if any).
15. Provide a list of all required equipment warranties.
16. Provide a list of all special warranties.
17. Provide a list of all operation and maintenance manuals.
18. Develop a change order log.
19. Develop a construction rework log.
20. Provide a list of all environmental considerations/regulatory agencies.
21. Review each technical provision of the specifications to highlight any significant issue.

NOTE: Two useful references in preparation of the Quality Assurance Plan is:

1. U.S. Army Corps of Engineers EP 415-1-261, Construction Inspector=s Guide in preparatory, initial and follow-up inspections.
2. U.S. Army Corps of Engineers 385 1-1, Safety and Health
1. Requirements Manual.

APPENDIX IV

SUMMARY OF SUBMISSIONS

SUBMISSION

1) Outline Design QA Plan
2) Task Design QA Plan

3) Landscaping Design
4) Finish Board
5) Interior Design
6) Basis of Design Report
7) Fire Protection Report
8) Review Comment Form
9) Study Submissions
10) Concept Submission
11) 35% Submission
12) 70% Submission
13) Contract Documents Submission
14) Final Submission
15) Bid Package Analysis
16) Environmental Permits Report
17) Water Flow Tests
18) Model
19) Rendering
20) Soils Analysis
21) Land Survey
22) Erosion Control Documents
23) Stormwater Management Documents
24) Hazardous Materials Survey
25) Quality Assurance Plan
26) Construction Progress Report
27) Milestone Inspection Report
28) Final Inspection Report
29) Daily Report
30) Weekly Report
31) Monthly Report
32) Meeting Minutes
33) Photographs